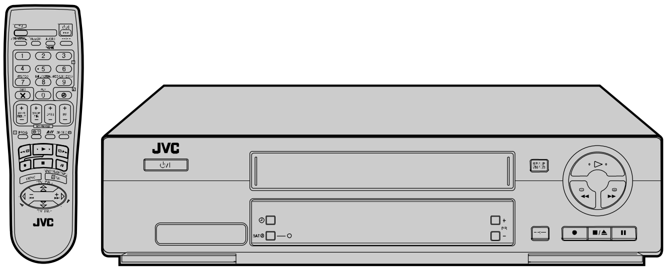
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J671EU/J672EK/J674EU



SHOWVIEW® DELUXE

Hi-Fi

VHS PAL

Regarding service information other than these sections, refer to the HR-J670EK/EU service manual (No. 82784). Also, be sure to note important safety precautions provided in the service manual.

SPECIFICATIONS

(The specifications shown pertain specifically to the model HR-J670EU/J671EU/J672EU/J673EU/J674EU, HR-J470EU/J472EU, HR-J270EU/J272EU)

GENERAL

Power requirement : AC 220 V – 240 V∿ , 50 Hz/60 Hz
Power consumption
  [HR-J670/671/672/673/674EU]
  Power on : 19 W
  Power off : 4.9 W
  [HR-J470/472/270/272EU]
  Power on : 17 W
  Power off : 4.9 W
Temperature
  Operating : 5°C to 40°C
  Storage : –20°C to 60°C
Operating position : Horizontal only
Dimensions (WxHxD) : 400 x 94 x 278 mm
Weight : 3.5 kg
Format : VHS PAL standard
Maximum recording time
  (SP) : 240 min. with E-240 video cassette
  (LP) [HR-J670/671/672/673/674/470/472EU only]
  : 480 min. with E-240 video cassette

VIDEO/AUDIO

Signal system : PAL-type colour signal and CCIR monochrome signal, 625 lines 50 fields
Recording system : DA4 (Double Azimuth) head helical scan system [HR-J670/671/672/673/674/470/472EU]
  Rotary two-head herical scan system [HR-J270/272EU]
Signal-to-noise ratio : 45 dB
Horizontal resolution : 250 lines
Frequency range : 70 Hz to 10,000 Hz (Normal audio)
  20 Hz to 20,000 Hz (Hi-Fi audio) [HR-J670/671/672/673/674EU only]
Input/Output : 21-pin SCART connectors : IN/OUT x 1, IN/DECODER x 1
RCA connectors : AUDIO OUT x 1 [HR-J670/671/672/673/674EU only]

TUNER/TIMER

TV channel storage capacity
  : 99 positions (+AUX position)
Tuning system : Frequency synthesized tuner
Channel coverage : VHF 47 – 89/104 – 300/302 – 470MHz
  UHF 470 – 862MHz
Aerial output : UHF channels 22 – 69 (Adjustable)
Memory backup time : Approx. 10 min.

ACCESSORIES

Provided accessories : RF cable,
  Infrared remote control unit,
  “R6” battery x 2
Optional accessories : Satellite Controller RM-SD1

Specifications shown are for SP mode unless otherwise specified.
E.& O.E. Design and specifications subject to change without notice.

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[HR-J671EU/J674EU/J672EK]

The following table indicate main different points between models HR-J670EU, HR-J671EU, HR-J674EU, HR-J670EK and HR-J672EK.

ITEM \ MODEL	HR-J670EU	HR-J671EU	HR-J674EU	HR-J670EK	HR-J672EK
FRONT PANEL COLOR	SILVER	BLACK & GOLD	SILVER	SILVER	BLACK & L.GLAY

The following table indicate different parts number between models HR-J670EU, HR-J671EU, HR-J674EU, HR-J670EK and HR-J672EK.

PACKING AND ACCESSORY ASSEMBLY <M1>

⚠	REF. NO.	ITEM \ MODEL	HR-J670EU	HR-J671EU	HR-J674EU
⚠	310	INST.BOOK(CZ)	LPT0322-013A	—	—
⚠	310	INST.BOOK(PO)	LPT0322-014A	—	—
⚠	310	INST.BOOK(HU)	LPT0322-015A	—	—

CABINET AND CHASSIS ASSEMBLY <M2>

⚠	REF. NO.	ITEM \ MODEL	HR-J670EU	HR-J671EU	HR-J674EU	HR-J670EK	HR-J672EK
⚠	501	FRONT PANEL ASSY	LP10289-003D	LP10289-049B	LP10289-048B	LP10289-009B	LP10289-050C
	501A	CASSETTE DOOR	LP20868-002A	LP20868-029A	LP20868-028A	LP20868-002A	LP20868-029A
	501C	DISPLAY WINDOW	LP20869-003A	LP20869-071A	LP20869-070A	LP20869-009A	LP20869-072A
⚠	502	TOP COVER	LP10013-017C	LP10013-023D	LP10013-051A	LP10013-017C	LP10013-023D
	503	TAP SCREW	QYTDSF3010M	←	QYTDSF3010R		

MAIN BOARD ASSEMBLY <03>

⚠	REF. NO.	ITEM \ MODEL	HR-J670EU	HR-J671EU	HR-J674EU	HR-J670EK	HR-J672EK
	PW1	MAIN BOARD ASSY	LPA10086-02E1	LPA10086-02H1	←	LPA10086-03E1	LPA10086-03H1
	IC1	IC	*JCP8020-MSB	JCP8020-MSD-2	←	*JCP8020-MSB	JCP8020-MSD-2
	D5301	ZENER DIODE	*MTZJ15A	MTZJ15C	←	*MTZJ15A	MTZJ15C

DEMOD BOARD ASSEMBLY <14>

⚠	REF. NO.	ITEM \ MODEL	HR-J670EU	HR-J671EU	HR-J674EU	HR-J670EK	HR-J672EK
	PW1	DEMOD BOARD ASSY	*LPA10060-03B	LPA10094-02A	←	*LPA10060-03B	LPA10094-02A

Notes : Mark — is not used.
Mark ← is same as left.
Mark * reference model was also changed.

VICTOR COMPANY OF JAPAN, LIMITED
VIDEO DIVISION

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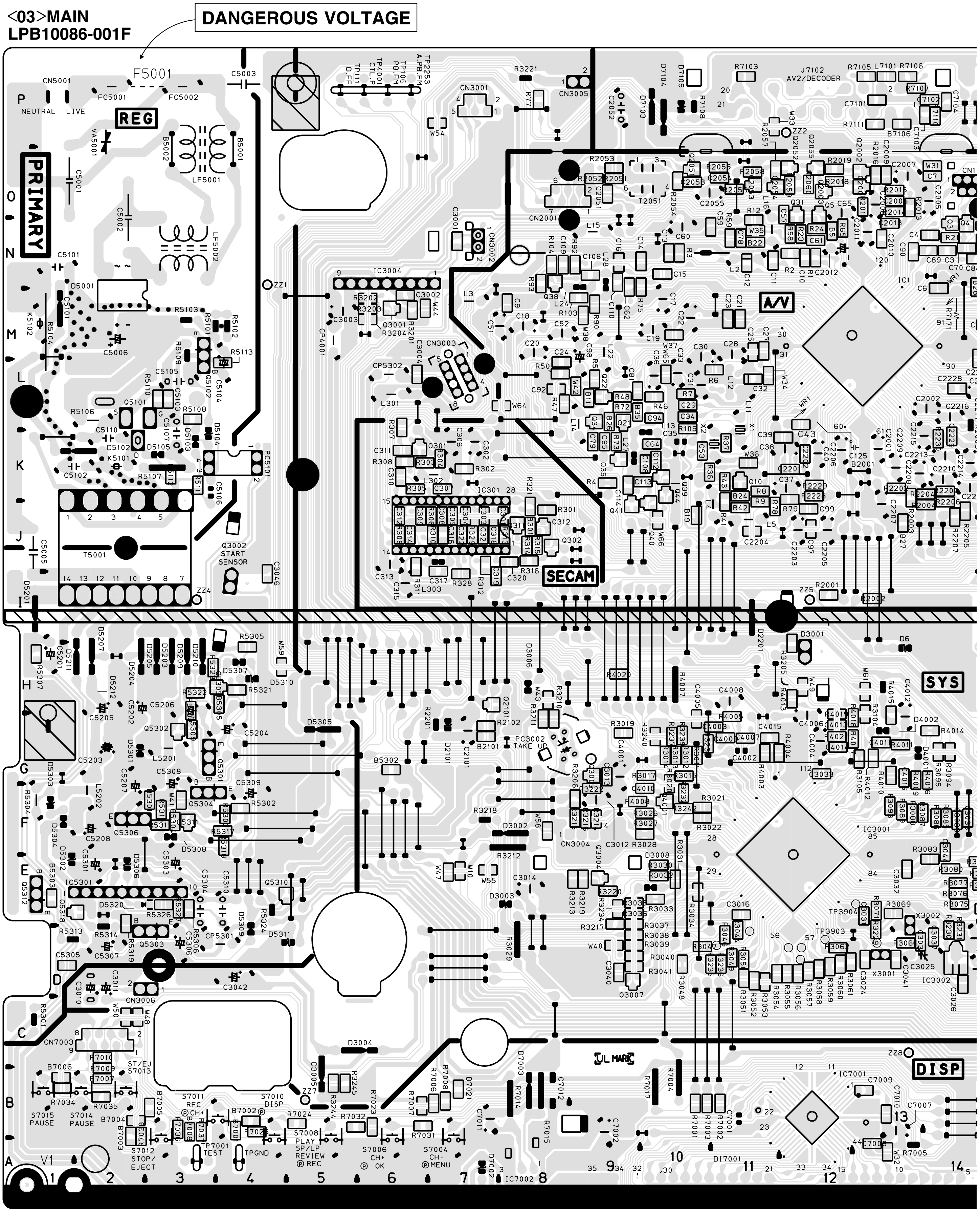
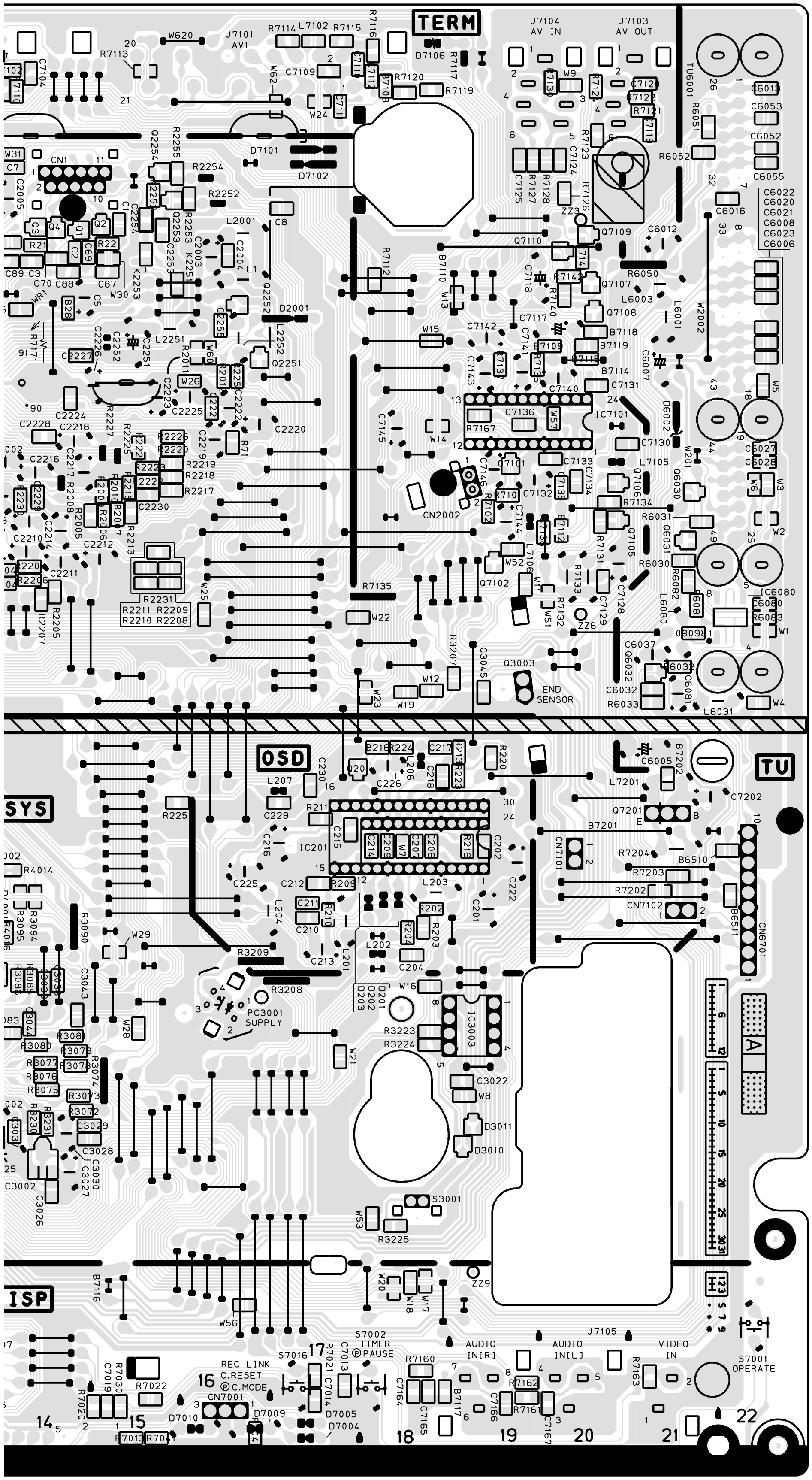
SECTION 4
CHARTS AND DIAGRAMS

COMPONENT PARTS LOCATION GUIDE ＜MAIN＞

REF.NO.	LOCATION		
CAPACITOR			
C1	B	C	15N
C2	B	C	14N
C3	B	C	14N
C4	B	C	14N
C5	A	D	14N
C6	B	C	14N
C7	B	C	14O
C8	B	C	17O
C9	B	C	8M
C10	B	C	12N
C11	B	C	11N
C12	B	C	11N
C13	B	C	10N
C14	B	C	10N
C15	B	C	10N
C16	B	C	9N
C17	A	D	10M
C18	A	D	8M
C19	A	D	10M
C20	A	D	8M
C21	B	C	11M
C22	A	D	10M
C23	B	C	11M
C24	B	C	8L
C25	B	C	11M
C27	B	C	11M
C28	A	D	11M
C29	B	C	10L
C30	A	D	10M
C31	A	D	10L
C32	B	C	11L
C33	A	D	10L
C34	B	C	10L
C35	A	D	10K
C36	A	D	10L
C37	A	D	11K
C38	A	D	12K
C39	B	C	12K
C40	A	D	12K
C43	B	C	12L
C51	A	D	8M
C52	A	D	8M
C53	B	C	10K
C57	B	C	12O
C59	B	C	11N
C60	A	D	10N
C61	B	C	12N
C62	B	C	9N
C64	B	C	10K
C65	A	D	12O
C69	B	C	14N
C70	B	C	14N
C78	B	C	11N
C79	B	C	9K
C81	B	C	9L
C87	B	C	15N
C88	B	C	14N
C89	B	C	14N
C90	B	C	13N
C92	B	C	8L
C94	B	C	10L
C95	B	C	9K
C97	B	C	12J
C98	A	D	9M
C99	B	C	12J
C106	B	C	9N
C108	B	C	10K
C109	B	C	8N
C110	B	C	9N
C112	B	C	10K
C113	B	C	10K
C114	B	C	9K
C125	A	D	12L
C201	A	D	19G
C202	B	C	19H
C204	B	C	18F
C206	B	C	18H
C207	B	C	18H
C209	B	C	18H
C210	B	C	17G
C211	B	C	17G
C212	B	C	17G
C213	A	D	17F
C214	B	C	18H
C215	B	C	17H
C216	A	D	17H
C217	B	C	18I
C218	B	C	18H
C222	A	D	19G
C225	A	D	16G
C226	A	D	18H
C229	B	C	17H
C230	B	C	17H
C301	B	C	8J
C302	A	D	7K
C303	B	C	7J
C304	B	C	7J
C305	B	C	7J
C306	A	D	7K
C307	B	C	7K
C308	B	C	7J
C309	B	C	6J
C310	B	C	6K
C311	B	C	6K
C312	B	C	6J
C313	A	D	6J
C314	B	C	6J
C315	A	D	6I
C316	B	C	7J
C317	B	C	7J
C318	B	C	7J
C319	B	C	7I
C320	B	C	8J
C321	B	C	7J
C322	B	C	7J
C2001	A	D	13K
C2002	A	D	13L
C2003	A	D	16N
C2004	B	C	16N
C2005	A	D	14O
C2006	B	C	13O
C2007	A	D	13O
C2008	A	D	13O
C2009	B	C	13O
C2010	B	C	13N
C2011	A	D	13N
C2012	A	D	12N
C2013	B	C	13N
C2051	B	C	9O
C2052	A	D	9P
C2053	B	C	10O
C2054	B	C	11O
C2055	A	D	11O
C2101	A	D	7G
C2201	B	C	12K
C2202	B	C	12K
C2203	A	D	12J
C2204	B	C	11J
C2205	A	D	12J
C2206	A	D	12K
C2207	A	D	13K
C2208	A	D	13K
C2209	A	D	13K
C2210	A	D	14K
C2211	A	D	14K
C2212	A	D	15K
C2213	A	D	14K
C2214	A	D	14K
C2215	A	D	14K
C2216	A	D	14L
C2217	A	D	14L
C2218	A	D	14L
C2219	A	D	16L
C2220	A	D	16L
C2221	B	C	16L
C2222	A	D	16L
C2223	A	D	15L
C2224	B	C	14M
C2225	A	D	16M
C2226	A	D	15M
C2227	B	C	14M
C2228	B	C	14L
C2229	B	C	14K
C2230	B	C	15K
C2251	A	D	15M
C2252	A	D	15M
C2253	B	C	15N
C2254	B	C	15O
C2255	B	C	16M
C3001	B	C	7N
C3002	B	C	6M
C3003	A	D	5M
C3004	B	C	6L
C3010	A	D	2C
C3011	A	D	2C
C3012	A	D	9F
C3013	B	C	9G
C3014	A	D	8E
C3016	B	C	11E
C3022	B	C	19E
C3024	B	C	13D
C3025	A	D	14D
C3026	B	C	14D
C3027	A	D	14D
C3028	B	C	14D
C3029	B	C	14D
C3030	A	D	14D
C3031	B	C	13E
C3032	B	C	13E
C3033	B	C	12G
C3036	B	C	13D
C3037	B	C	14D
C3038	B	C	14F
C3039	B	C	14F
C3040	B	C	9D
C3041	B	C	13D
C3042	A	D	4D
C3043	B	C	14F
C3044	B	C	14F
C3045	B	C	19I
C3046	B	C	4I
C4001	A	D	9G
C4002	A	D	11G
C4003	B	C	11G
C4004	A	D	12G
C4005	B	C	10G
C4006	A	D	12G
C4007	B	C	11G
C4008	A	D	11H
C4009	B	C	11G
C4010	B	C	10F
C4011	B	C	13G
C4012	A	D	13H
C4013	B	C	12G
C4014	B	C	12G
C4015	B	C	11G
C4016	B	C	13G
C5001	A	D	1O
C5002	A	D	2N
C5003	A	D	4P
C5005	A	D	1J
C5006	A	D	2M
C5101	A	D	1N
C5102	A	D	1K
C5103	B	C	3L
C5104	A	D	4M
C5105	A	D	3L
C5106	A	D	3J
C5107	A	D	3K
C5110	A	D	2K
C5201	A	D	1I
C5202	A	D	2H
C5203	A	D	2G
C5204	A	D	4G
C5205	A	D	2H
C5206	A	D	3H
C5207	A	D	2F
C5208	A	D	2F
C5301	A	D	2E
C5303	A	D	3E
C5304	A	D	3E
C5305	B	C	1D
C5306	A	D	3D
C5307	A	D	2D
C5308	A	D	3G
C5309	A	D	4F
C5310	A	D	4E
C6005	A	D	21I
C6006	B	C	22M
C6007	A	D	21M
C6008	B	C	22M
C6012	A	D	21N
C6013	B	C	22P
C6016	B	C	22O
C6020	B	C	22N
C6021	B	C	22N
C6022	B	C	22N
C6023	B	C	22M
C6027	B	C	22L
C6028	B	C	22L
C6032	B	C	21I
C6037	A	D	21J
C6052	B	C	22O
C6053	B	C	22P
C6055	B	C	22O
C6080	B	C	22J
C6081	A	D	21I
C7001	A	D	11B
C7002	A	D	9B
C7007	A	D	13B
C7008	B	C	13A
C7009	B	C	13B
C7010	B	C	13B
C7011	A	D	7B
C7012	A	D	8B
C7013	B	C	17B
C7014	B	C	17A
C7019	B	C	15A
C7101	B	C	13P
C7102	B	C	14P
C7103	B	C	14P
C7104	B	C	14P
C7109	B	C	17P
C7110	B	C	17P
C7111	B	C	17P
C7112	B	C	18P
C7117	A	D	20M
C7118	A	D	20N
C7119	B	C	21P
C7120	B	C	21P
C7124	B	C	20O
C7125	B	C	19O
C7128	A	D	20K
C7129	B	C	20J
C7130	B	C	20L
C7131	B	C	20M
C7132	A	D	20L
C7133	B	C	20L
C7134	B	C	20L
C7135	B	C	20L
C7136	B	C	19L
C7138	B	C	20K
C7140	A	D	20M
C7141	A	D	19M
C7142	A	D	19M
C7143	A	D	19M
C7144	A	D	19K
C7145	A	D	18L
C7146	A	D	19L
C7164	B	C	18A
C7165	B	C	18A
C7166	B	C	19A
C7167	B	C	20A
C7202	A	D	21H
CONNECTOR			
CN1	A	D	14O
CN2001	A	D	9O
CN2002	A	D	19L
CN3001	A	D	7P
CN3002	A	D	7N
CN3003	A	D	7L
CN3004	A	D	9F
CN3005	A	D	9P
CN3006	A	D	3D
CN5001	A	D	1P
CN6701	A	D	22F
CN7001	A	D	16A
CN7003	A	D	2C
CN7101	A	D	20H
CN7102	A	D	21G
DIODE			
D6	A	D	13H
D201	A	D	18G
D202	A	D	18G
D203	A	D	18G
D2001	A	D	16M
D2101	A	D	7H
D2201	A	D	11I
D3001	A	D	12H
D3002	A	D	8F
D3003	A	D	8E
D3004	A	D	5C
D3005	A	D	5C
D3006	A	D	8H
D3008	A	D	10E
D3010	B	C	19D
D3011	B	C	19D
D4001	A	D	13G
D4002	A	D	13G
D5001	B	C	2M
D5101	A	D	1M
D5102	A	D	2K
D5103	A	D	3K
D5104	A	D	3L
D5105	A	D	3K
D5201	A	D	1I
D5203	A	D	3I
D5204	A	D	2I
D5205	A	D	3I
D5207	A	D	2I
D5209	A	D	3I
D5210	A	D	3I
D5211	A	D	2H
D5212	A	D	2I
D5301	A	D	2G
D5302	A	D	1F
D5303	A	D	1F
D5304	A	D	1F
D5305	A	D	5G
D5306	A	D	2F
D5307	A	D	4H
D5308	A	D	3F
D5309	A	D	4D
D5310	A	D	4H
D5311	A	D	4D
D5320	B	C	2E
D6002	A	D	21M
D7002	A	D	7A
D7003	A	D	8B
D7004	A	D	17A
D7005	A	D	17A
D7009	A	D	16A
D7010	A	D	16A
D7101	A	D	17O
D7102	A	D	17O
D7103	A	D	10P
D7104	A	D	10P
D7105	A	D	10P
D7106	A	D	18P
IC			
IC1	B	C	13M
IC201	A	D	19G
IC301	A	D	8J
IC3001	B	C	12F
IC3002	B	C	14D
IC3003	A	D	19F
IC3004	A	D	7N
IC5301	A	D	2E
IC6080	B	C	22J
IC7001	B	C	12B
IC7002	A	D	8A
IC7101	A	D	20L
JACK			
J7101	A	D	16P
J7102	A	D	12P
J7103	A	D	21Q
J7104	A	D	20Q
J7105	A	D	20A
COIL			
L1	A	D	16N
L2	A	D	11N
L3	A	D	7M
L4	A	D	11J
L5	A	D	11J
L11	A	D	11L
L12	A	D	11L
L13	A	D	10K
L14	A	D	9L
L15	A	D	9N
L16	A	D	11O
L22	A	D	9M
L24	A	D	9N
L27	A	D	9K
L28	A	D	9M
L201	A	D	17G
L202	A	D	18F
L203	A	D	19G
L204	A	D	16G
L206	A	D	18I
L207	A	D	17H
L301	A	D	6L
L302	A	D	6K
L303	A	D	6J
L2001	A	D	16N
L2251	A	D	16M
L2252	A	D	16M
L5201	A	D	3G
L5202	A	D	2G
L6001	A	D	21M
L6003	A	D	21N
L6031	A	D	21I
L6080	A	D	21J
L7101	B	C	13P
L7102	B	C	17P
L7105	A	D	21L
L7106	A	D	19K
L7201	A	D	21H
TRANSISTOR			
Q1	B	C	14N
Q2	B	C	15N
Q3	B	C	14N
Q4	B	C	14N
Q5	B	C	12O
Q10	B	C	11K
Q21	B	C	9L
Q22	B	C	9L
Q31	B	C	12O
Q34	B	C	9L
Q35	B	C	9K
Q38	B	C	8N
Q39	B	C	10K
Q40	B	C	10J
Q41	B	C	9J
Q44	B	C	10K
Q201	B	C	17H
Q301	B	C	6K
Q302	B	C	8J
Q311	B	C	8J
Q312	B	C	8J
Q2001	B	C	13O
Q2002	B	C	13O
Q2003	B	C	12O
Q2051	B	C	10O
Q2052	B	C	12O
Q2053	B	C	11O
Q2054	B	C	11O
Q2055	B	C	12O
Q2101	B	C	7H
Q2251	B	C	16M
Q2252	B	C	16N
Q2253	B	C	15O
Q2254	B	C	15O
Q3001	B	C	6M
Q3002	A	D	4I
Q3003	A	D	19I
Q3004	B	C	9E
Q3005	B	C	9G
Q3007	B	C	9D
Q4001	B	C	10F
Q5101	A	D	2L
Q5102	A	D	3M
Q5301	A	D	3G
Q5302	B	C	3G
Q5303	A	D	3D
Q5304	A	D	4F
Q5305	B	C	4H
Q5306	A	D	2F
Q5310	B	C	5E
Q5311	B	C	3F
Q5312	A	D	1E
Q5318	B	C	2E
Q6030	B	C	21K
Q6031	B	C	21K
Q6032	B	C	21I
Q7101	B	C	19L
Q7102	B	C	19K
Q7105	B	C	20K
Q7106	B	C	20L
Q7107	B	C	20N
Q7108	B	C	20M
Q7109	B	C	20N
Q7110	B	C	20N
Q7201	A	D	21H
RESISTOR			
R1	B	C	12N
R2	B	C	12N
R3	B	C	10N
R4	B	C	9K
R5	B	C	9L
R6	B	C	11L
R7	B	C	10L
R8	B	C	11K
R9	B	C	11J
R12	B	C	11N
R21	B	C	14N
R22	B	C	15N
R23	B	C	12N
R24	B	C	12N
R36	B	C	10K
R37	B	C	11K
R41	B	C	11J
R42	B	C	11J
R43	B	C	11K
R46	B	C	10L
R47	B	C	8L
R48	B	C	9L
R50	B	C	8L
R58	B	C	12N
R59	B	C	11N
R65	B	C	12N
R71	B	C	16L
R72	B	C	9L
R73	B	C	9K
R75	B	C	10N
R77	B	C	8P
R78	B	C	11J
R79	B	C	12K
R90	B	C	9M
R92	B	C	9N
R93	B	C	8N
R103	B	C	9M
R104	B	C	8N
R105	B	C	10L
R202	B	C	18G
R203	B	C	18G
R204	B	C	18G
R209	B	C	17G
R210	B	C	17G
R211	B	C	17H
R213	B	C	19I
R216	B	C	19H
R220	B	C	19I
R223	B	C	19H
R224	B	C	18I
R225	B	C	15H
R301	B	C	8J
R302	B	C	7K
R303	B	C	6K
R304	B	C	7K
R305	B	C	6K
R306	B	C	7J
R307	B	C	6L
R308	B	C	6K
R309	B	C	6J
R310	B	C	7J
R311	B	C	6J
R312	B	C	7J
R313	B	C	8J
R314	B	C	8J
R315	B	C	8J
R316	B	C	8J
R321	B	C	8J
R328	B	C	7I
R329	B	C	7J
R2001	B	C	12I
R2002	B	C	13I
R2003	B	C	13K
R2004	B	C	14J
R2005	B	C	15K
R2006	B	C	15K
R2007	B	C	15K
R2008	A	D	14K
R2009	B	C	15K
R2010	B	C	15K
R2011	B	C	16M
R2012	B	C	16M
R2013	B	C	13O
R2014	B	C	13O
R2015	B	C	13O
R2016	B	C	13O
R2017	B	C	13O
R2018	B	C	12O
R2019	B	C	12O
R2051	B	C	9O
R2052	B	C	9O
R2053	B	C	9O
R2054	B	C	10O
R2055	B	C	11O
R2056	B	C	11O
R2057	B	C	11O
R2058	B	C	11O
R2059	B	C	12O
R2060	B	C	12O
R2102	B	C	7G
R2201	A	D	7G
R2202	B	C	13K
R2203	B	C	14K
R2204	B	C	14K
R2205	B	C	14J
R2206	B	C	14J
R2207	B	C	14J
R2208	B	C	15J
R2209	B	C	15K
R2210	B	C	15J
R2211	B	C	15K
R2213	B	C	15K
R2215	B	C	15L
R2217	B	C	15K
R2218	B	C	15L
R2219	B	C	15L
R2220	B	C	15L
R2222	B	C	15L
R2223	B	C	15L
R2224	B	C	15L
R2225	A	D	15L
R2226	B	C	15L
R2227	A	D	15L
R2228	B	C	12K
R2229	B	C	12K
R2230	B	C	14K
R2231	B	C	15K
R2251	B	C	16M
R2252	A	D	16O
R2253	B	C	16O
R2254	A	D	16O
R2255	B	C	15O
R3011	B	C	10G
R3012	B	C	10G
R3013	B	C	10G
R3014	B	C	10G
R3015	B	C	10G
R3017	B	C	10G
R3019	B	C	9G
R3020	B	C	10G
R3021	B	C	10F
R3022	B	C	10F
R3026	B	C	10F
R3027	B	C	10F
R3028	B	C	10F
R3029	A	D	8D
R3030	B	C	10E
R3031	B	C	10E
R3032	B	C	10E
R3033	B	C	10E
R3034	B	C	10E
R3035	B	C	9E
R3036	B	C	9E
R3037	B	C	9E
R3038	B	C	9D
R3039	B	C	9D
R3040	B	C	9D
R3041	B	C	9D
R3044	B	C	11D
R3046	B	C	11D
R3047	B	C	10D
R3048	B	C	10D
R3049	B	C	11D
R3050	B	C	11D
R3051	B	C	11D
R3052	B	C	11D
R3053	B	C	11D
R3054	B	C	11D
R3055	B	C	12D
R3056	B	C	12D
R3057	B	C	12D
R3058	B	C	12D
R3059	B	C	12D
R3060	B	C	12D
R3061	B	C	12D
R3062	B	C	12D
R3066	B	C	13D
R3069	B	C	13E
R3071	B	C	13E
R3072	B	C	14E
R3073	B	C	14E
R3074	A	D	15E
R3075	B	C	14E
R3076	B	C	14E
R3077	B	C	14E
R3078	B	C	14E
R3079	B	C	14E
R3080	B	C	14E
R3081	B	C	14E
R3083	B	C	14E
R3085	B	C	14F
R3086	B	C	14F
R3087	B	C	14F
R3088	B	C	13F
R3089	B	C	13F
R3090	A	D	14F
R3093	B	C	13F
R3094	B	C	14G
R3095	B	C	14G
R3104	B	C	13G
R3105	B	C	13G
R3201	B	C	6M
R3202	B	C	6M
R3203	B	C	6M
R3204	B	C	6M
R3205	B	C	12H
R3206	B	C	9F
R3207	B	C	19I
R3208	A	D	17F
R3209	A	D	17F
R3210	B	C	8G
R3211	B	C	8G
R3212	A	D	8F
R3213	B	C	9E
R3214	B	C	9F
R3215	B	C	9F
R3216	B	C	9F
R3217	B	C	9E
R3218	A	D	7F
R3219	B	C	9E
R3220	B	C	9E
R3221	A	D	8P
R3222	B	C	9F
R3223	B	C	18E
R3224	B	C	18E
R3225	B	C	18C
R3229	B	C	13D
R3230	B	C	14D
R3231	B	C	14D
R3232	B	C	10F
R3234	B	C	9E
R3235	B	C	11D
R3236	B	C	11D
R3237	B	C	10G
R3238	B	C	10G
R3239	B	C	10G
R3240	B	C	10G
R3242	B	C	10F
R3244	B	C	5B
R3245	B	C	5B
R4001	A	D	13H
R4003	B	C	11G
R4004	B	C	11G
R4005	B	C	11G
R4007	A	D	10H
R4008	B	C	9F
R4009	B	C	13G
R4010	B	C	13G
R4011	B	C	13G
R4012	B	C	13G
R4013	B	C	12H
R4014	B	C	14G
R4015	B	C	13G
R4016	B	C	14G
R4017	B	C	13G
R4018	B	C	13G
R4019	B	C	12G
R4020	B	C	9H
R4021	B	C	12G
R5101	A	D	4M
R5102	A	D	4M
R5103	A	D	3M
R5104	A	D	1N
R5106	A	D	2L
R5107	A	D	3K
R5108	B	C	3L
R5109	A	D	3L
R5110	B	C	3L
R5111	B	C	3K
R5112	B	C	3K
R5113	B	C	4L
R5301	A	D	1C
R5302	B	C	4F
R5303	B	C	4F
R5304	A	D	1F
R5305	B	C	4H
R5306	B	C	3E
R5307	B	C	1H
R5308	B	C	3H
R5309	B	C	3G
R5310	B	C	3F
R5311	B	C	3F
R5313	A	D	1D
R5314	A	D	2D
R5317	B	C	4F
R5318	B	C	4F
R5319	B	C	2E
R5321	B	C	4H
R5322	B	C	3H
R5323	B	C	3H
R5324	A	D	4E
R5326	B	C	3E
R5327	B	C	3E
R6030	B	C	21K
R6031	B	C	21K
R6032	B	C	21J
R6033	B	C	21I
R6050	A	D	21N
R6051	B	C	21P
R6052	B	C	21O
R6080	B	C	21J
R6081	B	C	21J
R6082	B	C	21J
R6083	B	C	22J
R7001	B	C	10B
R7002	B	C	11B
R7003	B	C	10B
R7004	A	D	10B
R7005	A	D	14A
R7006	B	C	6B
R7007	B	C	7B
R7008	B	C	7B
R7009	B	C	2B
R7010	B	C	2C
R7013	B	C	15A
R7014	A	D	8B
R7015	A	D	8B
R7017	A	D	10B
R7020	B	C	15A
R7021	B	C	17B
R7022	B	C	15A
R7023	B	C	6B
R7024	B	C	5B
R7025	B	C	4B
R7030	B	C	15A
R7031	B	C	6B
R7032	B	C	5B
R7033	B	C	2B
R7034	B	C	1B
R7035	B	C	2B
R7036	B	C	3B
R7037	B	C	3B
R7040	B	C	16A
R7041	B	C	15A
R7101	B	C	19K
R7102	B	C	19K
R7103	B	C	11P
R7105	B	C	13P
R7106	B	C	13P
R7107	B	C	13P
R7108	A	D	10P
R7110	B	C	14P
R7111	B	C	13P
R7112	B	C	18N
R7113	B	C	15P
R7114	B	C	17P
R7115	B	C	17P
R7116	B	C	18P
R7117	A	D	19P
R7119	B	C	18P
R7120	B	C	18P
R7121	B	C	21P
R7122	B	C	21P
R7123	B	C	20O
R7124	B	C	20P
R7126	B	C	20O
R7127	B	C	19O
R7128	B	C	20O
R7130	B	C	20P
R7131	B	C	20K
R7132	A	D	20J
R7133	A	D	20J
R7134	B	C	20K
R7135	A	D	18J
R7136	B	C	19M
R7137	B	C	19M
R7140	B	C	20N
R7141	B	C	20N
R7142	B	C	20N
R7160	B	C	18B
R7161	B	C	19A
R7162	B	C	19B
R7163	B	C	21B
R7167	B	C	19L
R7171	A	D	14M
R7202	B	C	21G
R7203	B	C	21G
R7204	A	D	21G
SWITCH			
S3001	A	D	18C
S7001	A	D	22B
S7002	A	D	18B
S7004	A	D	7B
S7006	A	D	6B
S7008	A	D	5B
S7010	A	D	4B
S7011	A	D	4B
S7012	A	D	3B
S7013	A	D	2B
S7014	A	D	2B
S7015	A	D	1B
S7016	A	D	17B
TESTPOINT			
TP106	A	D	6P
TP111	A	D	5P
TP2253	A	D	6P
TP3901	B	C	11D
TP3902	B	C	11D
TP3903	B	C	12D
TP3904	B	C	13E
TP3905	B	C	13D
TP3906	B	C	12D
TP3907	B	C	12D
TP3908	B	C	12D
TP4001	A	D	6P
TP7001	A	D	3A
TPGND	A	D	4A
OTHER			
CP4001	A	D	5M
CP5301	A	D	4D
CP5302	A	D	6L
DI7001	A	D	12A
F5001	A	D	2P
FC5001	A	D	2P
FC5002	A	D	3P
K2251	B	C	15N
K2252	B	C	15O
K2253	B	C	15N
K5101	A	D	2K
K5102	A	D	1M
LF5001	A	D	3O
LF5002	A	D	3N
PC01636	A	D	3I
PC02129	A	D	2G
PC3001	A	D	16F
PC3002	A	D	8G
PC5101	A	D	4K
T2051	A	D	9O
T5001	A	D	1K
TU6001	A	D	22P
VA5001	A	D	2O
WR1	A	D	12L
X1	A	D	11K
X2	A	D	11K
X3001	A	D	13D
X3002	A	D	13E

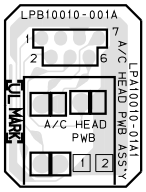
4.1 MAIN, A/C HEAD, R.PAUSE, MINI OPE AND LOADING MOTOR CIRCUIT BOARDS


<03>MAIN
LPB10086-001F
DANGEROUS VOLTAGE
PRIMARY
REG
SECAM
A/V
SYS
DISP


TERM
J7101 AV1
J7104 AV IN
J7103 AV OUT
TU6001
CN1
IC7101
CN2002
END SENSOR
OSD
SYS
TU
IC201
IC3003
PC3001 SUPPLY
CN7101
CN7102
CN6701
ISP
S7002 TIMER ⓟPAUSE
S7016
REC LINK C.RESET ⓟC.MODE
CN7001
AUDIO IN[R]
AUDIO IN[L]
VIDEO IN
J7105
S7001 OPERATE
14
15
16
17
18
19
20
21
22

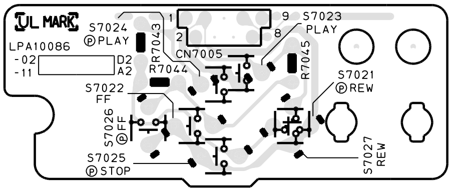
<12>A/C HEAD

LPB10010-001A


LPB10010-001A
1
2
6
7
UL MARK
A/C HEAD PWB
LPA10010-01A1 A/C HEAD PWB ASS'Y
1
2

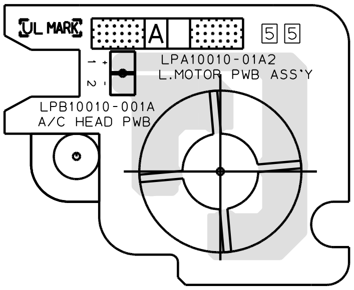
<28>MINI OPE

LPB10086-001F


UL MARK
LPA10086 -02 -11
D2 A2
S7024 ⓟPLAY
R7043
R7044
CN7005
S7023 PLAY
R7045
S7021 ⓟREW
S7022 FF
S7026 ⓟFF
S7025 ⓟSTOP
S7027 REW

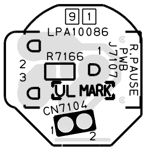
<55>LOADING MOTOR

LPB10010-001A

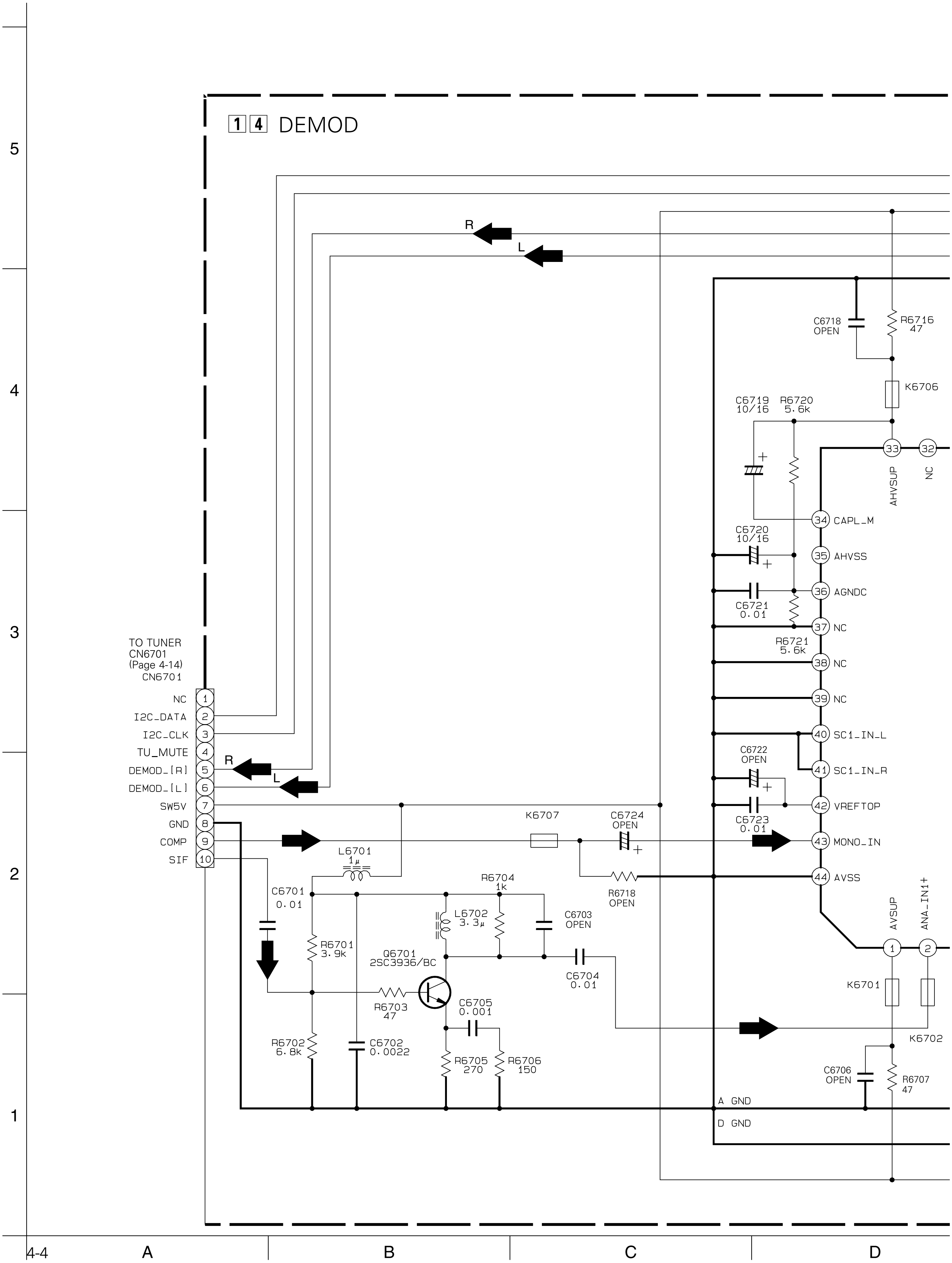

UL MARK
A
5 5
LPA10010-01A2 L.MOTOR PWB ASS'Y
LPB10010-001A A/C HEAD PWB

<91>R.PAUSE

LPB10086-001F


9 1
LPA10086
R.PAUSE PWB J7107
R7166
UL MARK
CN7104
1
2
3

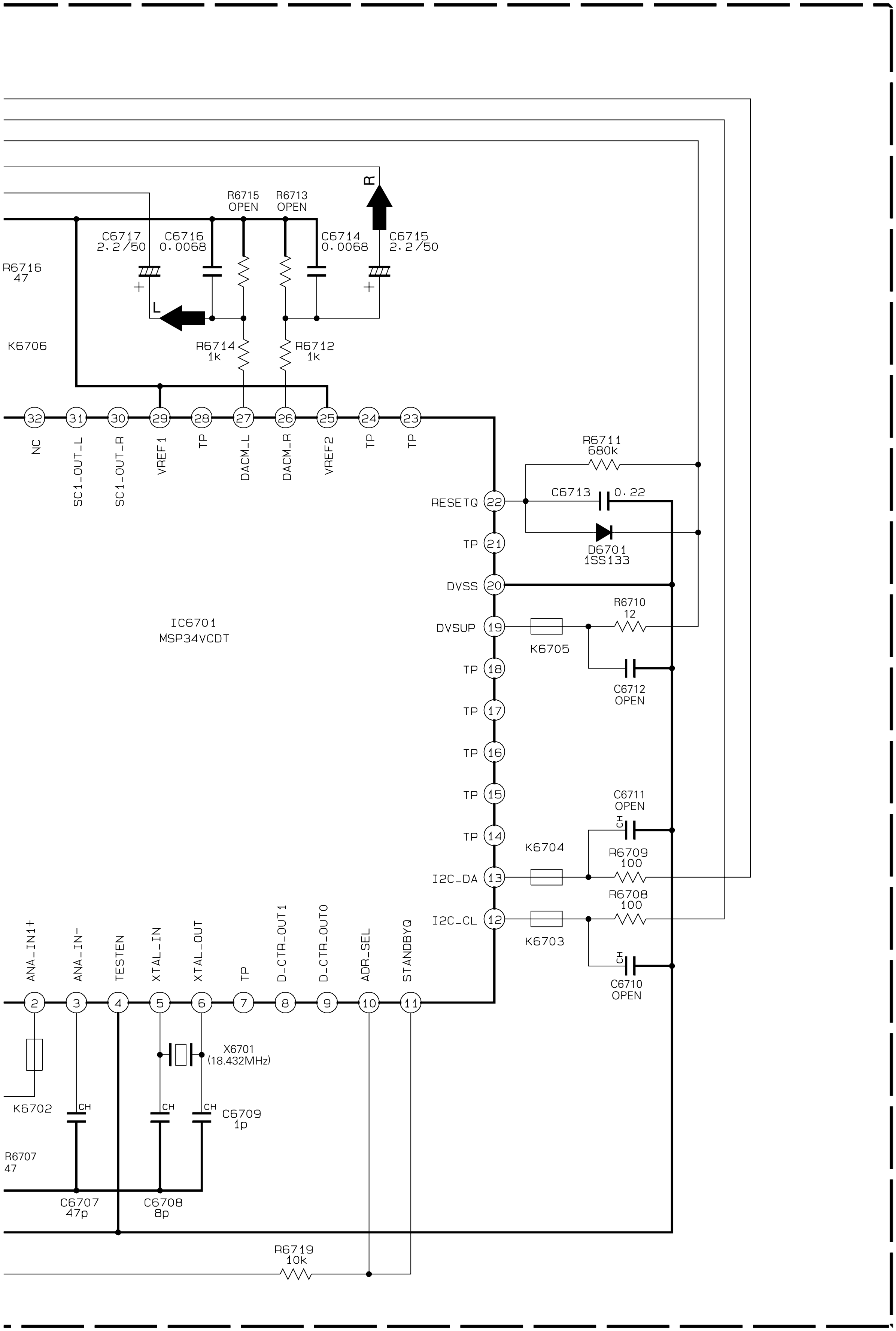
4.2 DEMODULATOR SCHEMATIC DIAGRAM


1 4 DEMOD
TO TUNER
CN6701
(Page 4-14)
CN6701
NC 1
I2C_DATA 2
I2C_CLK 3
TU_MUTE 4
DEMOD_[R] 5
DEMOD_[L] 6
SW5V 7
GND 8
COMP 9
SIF 10
R
L
C6718
OPEN
R6716
47
K6706
C6719
10/16
R6720
5.6k
33 AHVSUP
32 NC
34 CAPL_M
C6720
10/16
35 AHVSS
36 AGNDC
C6721
0.01
37 NC
R6721
5.6k
38 NC
39 NC
40 SC1_IN_L
C6722
OPEN
41 SC1_IN_R
42 VREFTOP
C6723
0.01
K6707
C6724
OPEN
43 MONO_IN
L6701
1μ
R6704
1k
R6718
OPEN
44 AVSS
C6701
0.01
L6702
3.3μ
C6703
OPEN
R6701
3.9k
Q6701
2SC3936/BC
C6704
0.01
1 AVSUP
2 ANA_IN1+
K6701
R6703
47
C6705
0.001
K6702
R6702
6.8k
C6702
0.0022
R6705
270
R6706
150
C6706
OPEN
R6707
47
A GND
D GND
5
4
3
2
1
A
B
C
D

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

NOTE : How to find the page showing the continuative schematic diagram

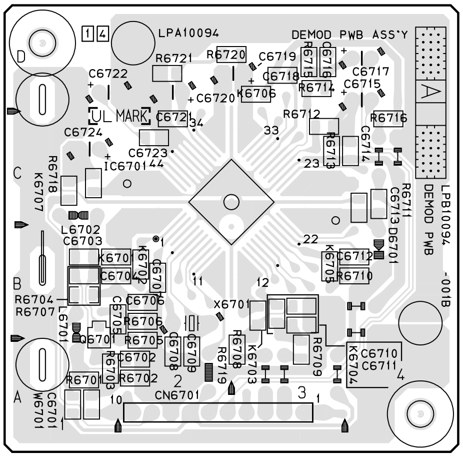
Example) TO SYSCON (Page 4-※): ***Refer to the HR-J670EU service manual (NO.82784)***
TO SYSCON (Page 4-※): ***Refer to this sevice manual***



R6715
OPEN
R6713
OPEN
R
C6717
2.2/50
C6716
0.0068
C6714
0.0068
C6715
2.2/50
R6716
47
L
K6706
R6714
1k
R6712
1k
32 NC
31 SC1_OUT_L
30 SC1_OUT_R
29 VREF1
28 TP
27 DACM_L
26 DACM_R
25 VREF2
24 TP
23 TP
R6711
680k
RESETQ 22
C6713
0.22
TP 21
D6701
1SS133
DVSS 20
R6710
12
DVSUP 19
K6705
IC6701
MSP34VCDT
TP 18
C6712
OPEN
TP 17
TP 16
TP 15
C6711
OPEN
CH
TP 14
K6704
R6709
100
I2C_DA 13
R6708
100
I2C_CL 12
K6703
CH
C6710
OPEN
2 ANA_IN1+
3 ANA_IN-
4 TESTEN
5 XTAL_IN
6 XTAL_OUT
7 TP
8 D_CTR_OUT1
9 D_CTR_OUT0
10 ADR_SEL
11 STANDBYQ
X6701
(18.432MHz)
K6702
CH
CH
CH
C6709
1p
R6707
47
C6707
47p
C6708
8p
R6719
10k

4.3 DEMODULATOR CIRCUIT BOARD

<14>DEMOD
LPB10094-001B



1 4
LPA10094
DEMOD PWB ASS'Y
D
C
B
A
R6721
R6720
C6719
R6715
C6716
C6717
C6715
C6722
C6718
R6714
C6720
K6706
UL MARK
C6721
34
33
R6712
R6716
C6724
C6723
44
IC6701
23
R6713
C6714
R6718
K6707
R6711
C6713
D6701
LPB10094
DEMOD PWB
-001B
L6702
C6703
1
22
K6701
K6702
C6707
C6704
K6705
C6712
R6710
11
12
R6704
R6707
C6706
C6705
X6701
L6701
R6706
Q6701
R6705
C6708
C6709
R6708
K6703
R6709
K6704
C6710
C6711
C6702
R6703
R6719
R6701
R6702
2
4
C6701
W6701
10
CN6701
3
1

COMPONENT PARTS LOCATION GUIDE
<DEMODULATOR>

REF.NO.	LOCATION		
CAPACITOR			
C6701	B	C	1A
C6702	B	C	2A
C6703	B	C	1B
C6704	B	C	1B
C6705	B	C	2B
C6706	B	C	2B
C6707	B	C	2B
C6708	B	C	2A
C6709	B	C	2A
C6710	B	C	3B
C6711	B	C	3B
C6712	B	C	4B
C6713	B	C	4C
C6714	B	C	4C
C6715	A	D	4D
C6716	B	C	3D
C6717	A	D	4D
C6718	B	C	3D
C6719	A	D	3D
C6720	A	D	2D
C6721	B	C	2C
C6722	A	D	1D
C6723	B	C	2C
C6724	A	D	1C
CONNECTOR			
CN6701	A	D	3A
DIODE			
D6701	A	D	4B
IC			
IC6701	B	C	3C
COIL			
L6701	A	D	1A
L6702	A	D	1C
TRANSISTOR			
Q6701	B	C	1B
RESISTOR			
R6701	B	C	1A
R6702	B	C	2A
R6703	B	C	1A
R6704	B	C	1B
R6705	B	C	2A
R6706	B	C	2B
R6707	B	C	1B
R6708	B	C	3A
R6709	B	C	3A
R6710	B	C	4B
R6711	B	C	4C
R6712	B	C	3C
R6713	B	C	3C
R6714	B	C	3D
R6715	B	C	3D
R6716	B	C	4C
R6718	B	C	1C
R6719	A	D	2A
R6720	B	C	3D
R6721	B	C	2D
OTHER			
K6701	B	C	1B
K6702	B	C	2B
K6703	B	C	3B
K6704	B	C	3B
K6705	B	C	3B
K6706	B	C	3D
K6707	B	C	1C
X6701	A	D	2B

SECTION 5
PARTS LIST

5.1 ELECTRICAL PARTS LIST

****

DEMOD BOARD ASSEMBLY <14>

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PW1	LPA10094-02A	DEMOD BOARD ASSY	
IC6701	MSP34VCDT	IC	
	or MSP3417D	IC	
Q6701	2SC3936/BC/-X	TRANSISTOR	
D6701	1SS133	DIODE	
	or 1N4148M	DIODE	
R6701	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
R6702	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R6703	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
R6704	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R6705	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
R6706	NRSA02J-151X	MG RESISTOR	150Ω,1/10W
R6707	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
R6708	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6709	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R6710	NRSA02J-120X	MG RESISTOR	12Ω,1/10W
R6711	NRSA02J-684X	MG RESISTOR	680kΩ,1/10W
R6712	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R6714	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R6716	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
R6719	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R6720	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
R6721	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
C6701	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6702	NCB21HK-222X	CAPACITOR	0.0022μF,50V
C6704	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6705	NCB21HK-102X	CAPACITOR	0.001μF,50V
C6707	NDC21HJ-470X	CAPACITOR	47pF,50V
C6708	NDC21HJ-8R0X	CAPACITOR	8pF,50V
C6709	NDC21HJ-1R0X	CAPACITOR	1pF,50V
C6713	NCF21CZ-224X	CAPACITOR	0.22μF,16V
C6714	NCB21HK-682X	CAPACITOR	0.0068μF,50V
C6715	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
C6716	NCB21HK-682X	CAPACITOR	0.0068μF,50V
C6717	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
C6719	QEKJ1CM-106	E CAPACITOR	10μF,16V
C6720	QEKJ1CM-106	E CAPACITOR	10μF,16V
C6721	NCB21HK-103X	CAPACITOR	0.01μF,50V
C6723	NCB21HK-103X	CAPACITOR	0.01μF,50V
L6701	QQL231J-1R0Y	COIL	1μH
L6702	QQL231J-3R3Y	COIL	3.3μH
X6701	QAX0443-001	CRYSTAL RESONATOR	
K6701	NQR0200-003X	FERRITE BEAD	
K6702	NQR0200-003X	FERRITE BEAD	
K6703	NQR0200-003X	FERRITE BEAD	
K6704	NQR0200-003X	FERRITE BEAD	
K6705	NQR0200-003X	FERRITE BEAD	
K6706	NQR0200-003X	FERRITE BEAD	
BK1	LP40077-001A	BRACKET(BOARD)	
CN6701	QGG2502K1-10	HEADER PIN	

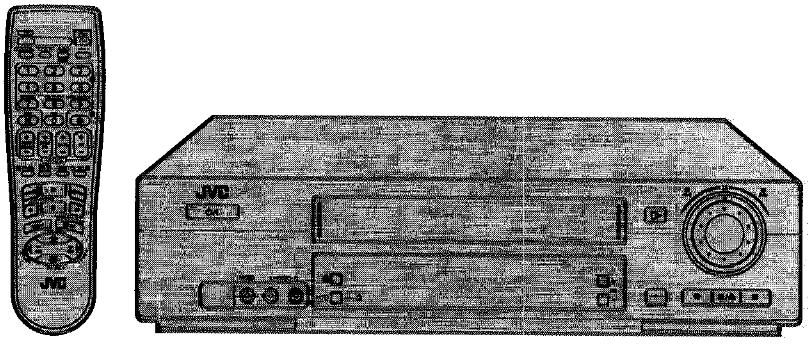
# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J670EK/J670EU/J770EK/J770EU



VIDEO Plus+® DELUXE

Hi-Fi VHS PAL

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-J770EK)*

GENERAL

Power requirement : AC 220 – 240 V∿, 50/60 Hz
Power consumption
Power on : 19 W
Power off : 4.9 W
Temperature
Operating : 5°C to 40°C
Storage : –20°C to 60°C
Operating position : Horizontal only
Dimensions (WxHxD) : 400 x 94 x 281 mm
Weight : 3.5 kg
Format : VHS PAL standard
Maximum recording time
(SP) : 240 min. with E-240 video cassette
(LP) : 480 min. with E-240 video cassette

VIDEO/AUDIO

Signal system : PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system : DA4 (Double Azimuth) helical scan system
Signal-to-noise ratio : 45 dB
Horizontal resolution : 250 lines
Frequency range : 70 Hz to 10,000 Hz (Normal audio)
20 Hz to 20,000 Hz (Hi-Fi audio)
Input/Output : 21-pin SCART connectors (IN/OUT x 1, IN/DECODER x 1)
RCA connectors (VIDEO IN x 1, AUDIO IN x 1, AUDIO OUT x 1)

TUNER/TIMER

TV channel storage capacity : 99 positions (+AUX position)
Tuning system : Frequency synthesized tuner
Channel coverage : VHF 44.5 – 143/143 – 470 MHz
UHF 470 – 862 MHz
Aerial output : UHF channels 22 – 69 (Adjustable)
Memory backup time : Approx. 10 min.

ACCESSORIES

Provided accessories : RF cable,
Satellite Controller,
Infrared remote control unit,
"AA" battery x 2

Specifications shown are for SP mode unless otherwise specified.
E.& O.E. Design and specifications subject to change without notice.

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No. 82784
December 1999

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The following table lists the differing points between Models (HR-J670EK, HR-J670EU, HR-J770EK and HR-J770EU) in this series.

	HR-J670EK	HR-J670EU	HR-J770EK	HR-J770EU
JOG/SHUTTLE	NOT USED	NOT USED	USED	USED
VIDEO SYSTEM	PAL	PAL/MESECAM(MANUAL)	PAL	PAL/MESECAM(MANUAL)
BROADCASTING STANDARD	I	B/G, D/K	I	B/G, D/K
STEREO DECODER	NICAM	NICAM/A2	NICAM	NICAM/A2
LANGUAGE [INITIAL] (ON SCREEN DISPLAY)	ENG	13 LANG. [ENG]	ENG	13 LANG. [ENG]
CABLE & DBS. BOX CTL	USED	READY	USED	USED
FRONT VIDEO/AUDIO IN	USED	NOT USED	USED	USED
CABLE MOUSE	SATELLITE CONTROLLER	OPTION	SATELLITE CONTROLLER	SATELLITE CONTROLLER

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

●Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
Replace only with specified part numbers.
Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
Caution for continued protection against fire hazard.
Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts.
Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

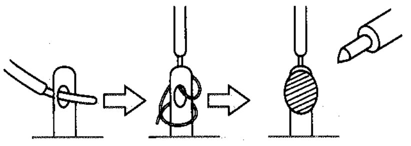


Fig.1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

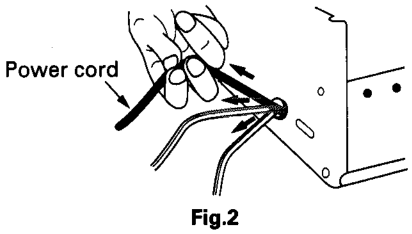


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
   1) **Connector part number** : E03830-001
   2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
   3) **Replacement procedure**
      (1) Remove the old connector by cutting the wires at a point close to the connector.
      Important : Do not reuse a connector (discard it).

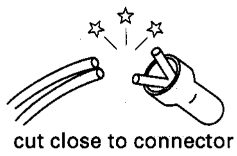


Fig.3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

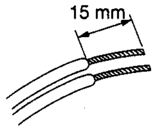


Fig.4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

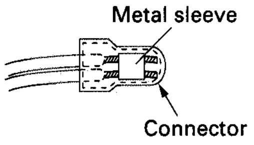


Fig.5

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

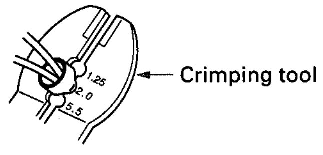


Fig.6

(5) Check the four points noted in Fig.7.

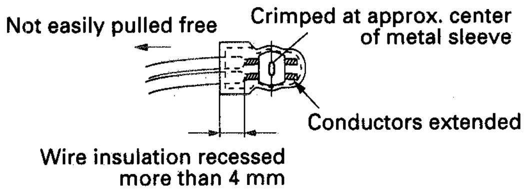

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig.7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

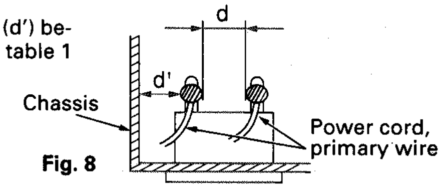


Fig. 8

4. **Leakage current test**
Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
Measuring Method : (Power ON)
Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

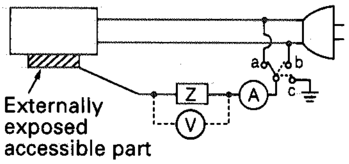


Fig. 9

5. **Grounding (Class I model only)**
Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
Measuring Method:
Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

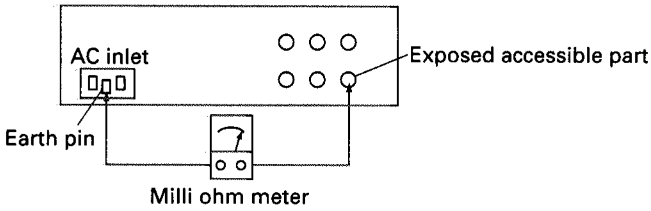


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 miute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	1 MΩ ≦ R ≦ 12 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ/500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

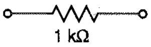
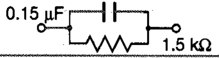
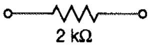
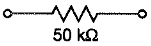
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan		i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada		i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia		i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
			i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

Safety Precautions

The rating plate and the safety caution are on the rear of the unit.

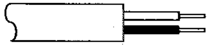
WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

IMPORTANT

- Please read the various precautions on page 2 – 3 of this instruction manual before installing or operating the recorder.
- It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast or cable programme and in any literary, dramatic, musical, or artistic work embodied therein.

IMPORTANT

Connection to the mains supply in the United Kingdom.
DO NOT cut off the mains plug from this equipment. If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain a proper safety approved extension lead/adapter or consult your dealer.
In the unlikely event of the plug fuse failing be sure to replace the fuse only with an identical approved type, as originally fitted, and to replace the fuse cover. If the fuse fails again consult your nearest JVC dealer.
If nonetheless the mains plug is cut off remove the fuse and dispose of the plug immediately, to avoid a possible shock hazard by inadvertent connection to the mains supply.
If this product is not supplied fitted with a mains plug then follow the instructions given below:
DO NOT make any connection to the Larger Terminal coded E or Green.
The wires in the mains lead are coloured in accordance with the following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt — consult a competent electrician.

VHS PAL HQ VIDEO Plus+ DELUXE

- Cassettes marked "VHS" (or "S-VHS") can be used with this video recorder. However, only VHS recordings can be made and played back.
- HQ VHS is compatible with existing VHS equipment.
- VIDEO Plus+ and PlusCode are registered trademarks of Gemstar Development Corporation. The VIDEO Plus+ system is manufactured under license from Gemstar Development Corporation.

CAUTION

- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the mains outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the mains outlet prior to connecting or disconnecting any signal lead or aerial.

The STANDBY/ON ⏻/I button does not completely shut off mains power from the unit, but switches operating current on and off. " ⏻ " shows electrical power standby and " I " shows ON.

Video tapes recorded with this video recorder in the LP (Long Play) mode cannot be played back on a single-speed video recorder.

Failure to heed the following precautions may result in damage to the recorder, remote control or video cassette.

1. **DO NOT place the recorder . . .**
   ... in an environment prone to extreme temperatures or humidity.
   ... in direct sunlight.
   ... in a dusty environment.
   ... in an environment where strong magnetic fields are generated.
   ... on a surface that is unstable or subject to vibration.
2. **DO NOT block the recorder's ventilation openings.**
3. **DO NOT place heavy objects on the recorder or remote control.**
4. **DO NOT place anything which might spill on top of the recorder or remote control.**
5. **AVOID violent shocks to the recorder during transport.**

MOISTURE CONDENSATION

Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions—just as water droplets form in the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder turned on for a few hours to let the moisture dry.

Some Do's And Don'ts On The Safe Use Of Equipment

This equipment has been designed and manufactured to meet international safety standards but, like any electrical equipment, care must be taken if you are to obtain the best results and safety is to be assured.

DO read the operating instructions before you attempt to use the equipment.
DO ensure that all electrical connections (including the mains plug, extension leads and interconnections between pieces of equipment) are properly made and in accordance with the manufacturer's instructions. Switch off and withdraw the mains plug when making or changing connections.
DO consult your dealer if you are ever in doubt about the installation, operation or safety of your equipment.
DO be careful with glass panels or doors on equipment.

DON'T continue to operate the equipment if you are in any doubt about it working normally, or if it is damaged in any way — switch off, withdraw the mains plug and consult your dealer.
DON'T remove any fixed cover as this may expose dangerous voltages.
DON'T leave equipment switched on when it is unattended unless it is specifically stated that it is designed for unattended operation or has a standby mode. Switch off using the switch on the equipment and make sure that your family knows how to do this. Special arrangements may need to be made for infirm or handicapped people.
DON'T use equipment such as personal stereos or radios so that you are distracted from the requirements of road safety. It is illegal to watch television whilst driving.
DON'T listen to headphones at high volume, as such use can permanently damage your hearing.
DON'T obstruct the ventilation of the equipment, for example with curtains or soft furnishings. Overheating will cause damage and shorten the life of the equipment.
DON'T use makeshift stands and NEVER fix legs with wood screws — to ensure complete safety always fit the manufacturer's approved stand or legs with the fixings provided according to the instructions.
DON'T allow electrical equipment to be exposed to rain or moisture.

ABOVE ALL...

— **NEVER** let anyone especially children push anything into holes, slots or any other opening in the case — this could result in a fatal electrical shock;
— **NEVER** guess or take chances with electrical equipment of any kind — it is better to be safe than sorry!

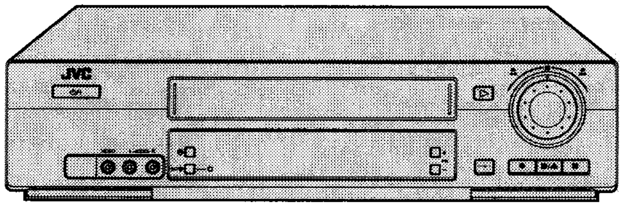
▶ Dear Customer,

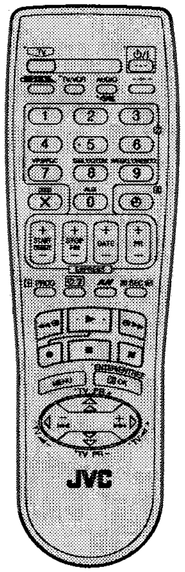
Thank you for purchasing this JVC Video Cassette Recorder.
Please use this **QUICK SET UP GUIDE** to help you to set up your video cassette recorder.

STEP 1 CHECK THE CONTENTS

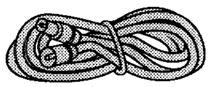
CHECK ALL THE CONTENTS SHOWN BELOW

Video Cassette Recorder

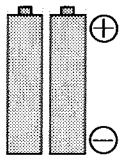




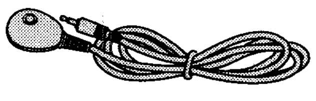
Infrared Remote Control Unit



RF Cable



"AA" Batteries (x 2)



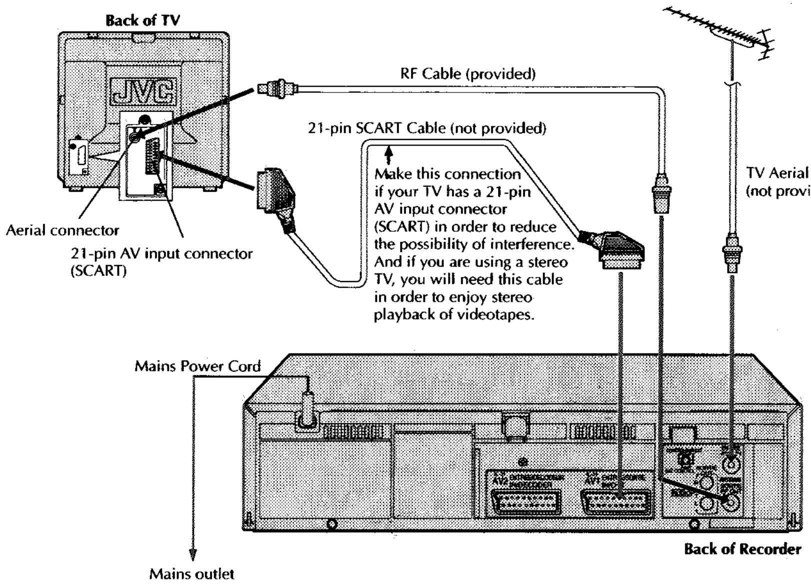
Satellite Controller

▶ You are now ready to install your video recorder.

STEP 2 INSTALLATION

CONNECT VIDEO RECORDER TO TV

▶ Place the recorder on a stable, flat surface.


Back of TV
RF Cable (provided)
21-pin SCART Cable (not provided)
Make this connection if your TV has a 21-pin AV input connector (SCART) in order to reduce the possibility of interference. And if you are using a stereo TV, you will need this cable in order to enjoy stereo playback of videotapes.
TV Aerial Cable (not provided)
Aerial connector
21-pin AV input connector (SCART)
Mains Power Cord
Mains outlet
Back of Recorder

RF CONNECTION
To connect to a TV with NO 21-pin AV input connector (SCART) . . .

1– Disconnect the TV aerial cable from the TV.
2– Connect the TV aerial cable to the ANT. IN jack on the rear panel of the recorder.
3– Connect the provided RF cable between the RF OUT jack on the rear panel of the recorder and the TV's aerial connector.

AV CONNECTION
To connect to a TV with 21-pin AV input connector (SCART) . . .

1– Connect the aerial, recorder and TV as per "RF CONNECTION".
2– Connect an optional SCART cable between the AV1 (L-1) IN/OUT socket on the rear panel of the recorder and the TV's 21-pin AV input connector (SCART).

ATTENTION
- ■ Do NOT Plug the mains power cord into a mains outlet until all connections are completed.
- ■ Do NOT press the ⏻/I button on the recorder or on the remote control to turn on the recorder's power before you start the Auto Set Up procedure described on page 6.

AFTER YOU FINISH THIS STEP ▷ *Go to Step 3 – AUTO SET UP*

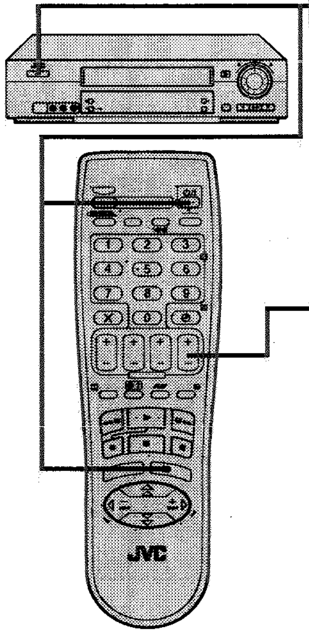
STEP 3 AUTO SET UP

SET THE TUNER CHANNELS, CLOCK, GUIDE PROGRAM NUMBERS AND VIDEO CHANNEL*

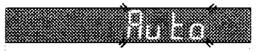
The Auto Set Up function sets the tuner channels, clock, VIDEO Plus+ assigned Guide Program numbers and the video channel* automatically the first time the ⏻/I button on the recorder or on the remote is pressed to turn on the recorder after the mains power cord has been plugged into a mains outlet.

** Useful if you have connected the video recorder to your TV via RF connection (☞ pg. 5). Video Channel (RF output channel) is the channel on which your TV receives picture and sound signals from the video recorder through the RF cable.*

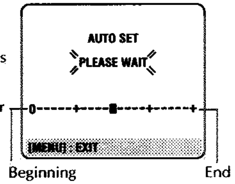
Before performing the following procedure, make sure that:
- ■ the TV aerial cable is connected to the recorder.
- ■ the mains power cord is plugged into the mains outlet.
- ■ batteries have been installed in the remote control.



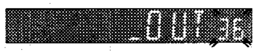
1 Press ⏻/I. If "Auto" appears on the display panel, press **OK** or ▷. "Auto" blinks; do NOT press any button on the recorder or remote control until the display panel shows either the display as illustrated below in item **2** or "– – :– –". Auto Set Up usually takes about 4 – 12 minutes; the duration varies by area.



- If "– –:– –" appears on the display panel, refer to page 8.
- With the AV connection (☞ pg. 5), if the TV is turned on and set to its AV mode, the AUTO SET screen will appear.
- When you have connected the video recorder to a TV offering T-V Link via the AV connection (☞ pg. 5) and the TV is turned on, the recorder automatically performs the Preset Download (☞ pg. 7) even if you select "Auto" for Auto Set Up function.

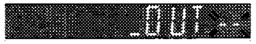


2
- ***If you have connected the video recorder to your TV via the provided RF cable only (RF connection) —***
the channel that is shown on the display panel is your Video Channel.
To view picture signals from the video recorder, set your TV to the Video Channel. — Refer to the instructions supplied with your TV set for how to do this.



Go to item **3**.

- ***If you have connected the video recorder to your TV via both the provided RF cable and a 21-pin SCART cable (AV connection)***
— you do not need the video channel so you have to set the video channel to off.
Press **PR** – until the display panel shows "_OUT– –" to set the Video Channel to off.
To view picture signals from the video recorder, set your TV to its AV mode. — Refer to the instructions supplied with your TV set for how to do this.



Go to item **3**.

3 Press **OK** to finish Auto Set Up and refer to page 8 to check the results.

ATTENTION

Once you have performed Auto Set Up, all the stored stations, Guide Program numbers and the video channel remain in the recorder's memory and the recorder will not perform Auto Set Up again. If there is a power cut and the recorder's memory backup expires you only need to reset the clock. (☞ pg. 38)

If you have moved to a different area, perform each setting as required.
- ■ Video Channel setting (for RF connection users) ☞ pg. 40
- ■ Tuner setting ☞ pg. 42
- ■ Clock setting ☞ pg. 38

If a new station begins broadcasting in your area, perform tuner setting (☞ pg. 42) and, if necessary, video channel setting (☞ pg. 40).

NOTES:
- *Auto channel set function takes place first; it assigns automatically all receivable stations in your area.*
- *Auto clock set function sets the clock automatically.*
- *During auto channel set, the recorder recognizes each station name of the detected stations and stores them in the recorder's memory, then automatically sets the VIDEO Plus+ assigned Guide Program number for those stations according to the broadcast area.*
- ***For RF connection users:** The video recorder detects the channels which are not occupied by local stations and selects one channel automatically for your Video Channel that is located in the middle of more than 5 vacant channels.*
- *If there is power cut or if you press ⏻/I or **MENU** while Auto Set Up is in progress, Auto Set Up will be interrupted; be sure to turn off the recorder power once and press ⏻/I to turn the power back on in order to re-start Auto Set Up.*

PRESET DOWNLOAD

SET THE TUNER CHANNELS BY DOWNLOADING FROM YOUR TV, CLOCK AND GUIDE PROGRAM NUMBERS

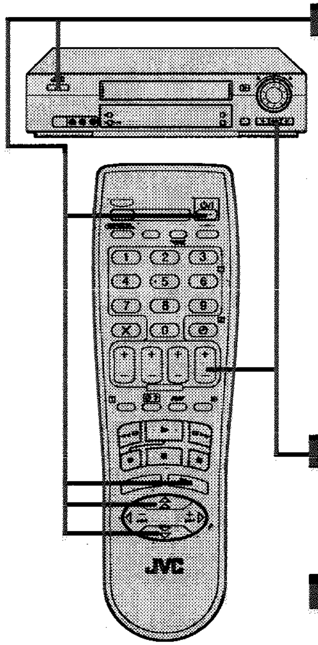
When you connect the recorder and your TV via fully-wired 21-pin SCART cable (☞ pg. 5), you can set the recorder's tuner channels by downloading preset data from your TV instead of using the Auto Set Up function (☞ pg. 6). After downloading is completed, the recorder sets the clock and VIDEO Plus+ assigned Guide Program numbers automatically.
For details, refer to the instruction manual for your TV.

ATTENTION

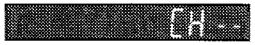
You can use this function only with a TV offering T-V Link, etc.*

** Compatible with TVs offering T-V Link, EasyLink, Megalogic, SMARTLINK, Q-Link, DATA LOGIC or NexTView Link via fully-wired 21-pin SCART cable. The degree of compatibility and available functions may differ by system.*

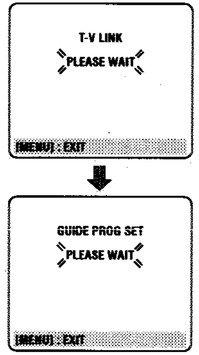
Before performing the following procedure, make sure that:
- ■ the TV aerial cable is connected to the recorder and a 21-pin SCART cable is connected between your TV and the recorder.
- ■ the mains power cord is plugged into the mains outlet.
- ■ batteries have been installed in the remote control.



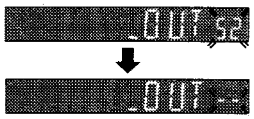
1 Press ⏻/I. If "Auto" appears on the display panel, Press ∆∇ to select "CH – –" and press **OK** or ▷. Preset position on the display panel increases from "CH1"; do NOT press any button on the recorder or remote control until the display panel shows either the display as illustrated on page 8 or "– – :– –".



- If "– –:– –" appears on the display panel, refer to page 8.
- If you are using the on-screen display, the T-V LINK screen will appear. Then the GUIDE PROG SET screen will appear during Guide Program number set.
- If you press any button on the recorder or remote control while downloading is in progress, this process will be interrupted and you will need to start again. See NOTES below.



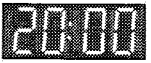
2 Press ⏻/I to turn off the recorder. Press and hold down **STOP** on the recorder until the display panel shows the display as illustrated on the right. Press **PR** – until the display panel shows "_OUT– –" to set the Video Channel to off.

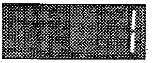


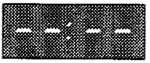
3 Press **OK** to exit Video Channel Set mode.
To view picture signals from the video recorder, set your TV to its AV mode. — Refer to the instructions supplied with your TV set for how to do this.

NOTES:
- *In areas where no TV station transmits the PDC signal, the recorder cannot perform either auto clock set or auto Guide Program number set.*
- *If there is a power cut, or if you press ⏻/I or **MENU** while downloading or set up is in progress, it will be interrupted; be sure to turn off the recorder power once and try again from the beginning.*
- *Auto clock may not function properly depending on reception conditions.*
- *When you perform Preset Download, be sure to use fully-wired 21-pin SCART cable.*
- *On this recorder, the characters available for station names (ID) are A–Z, 0–9, –, ✱, + and ␣ (space). The names of some downloaded stations may differ from those on your TV (☞ pg. 46).*

Auto Set Up/Preset Download results appear on the display panel

A

When both auto channel set and auto clock set have been completed successfully the correct current time will be displayed after the **OK** button is pressed in item **3** on page 6 or after performing the item **1** on page 7.

B

When auto channel set has been completed successfully but auto clock set has not, "(PR)1" will be displayed after the **OK** button is pressed in item **3** on page 6 or after performing the item **1** on page 7.

C

When neither auto channel set nor auto clock set has been completed successfully, "– –:– –" will be displayed.

* You can check if the Guide Program numbers have been set correctly when you perform VIDEO Plus+ Timer Programming (☞ pg. 16); if the correct preset position number is displayed in step **3**, this confirms that the Guide Program number for the PlusCode number you enter in step **2** has been set correctly.

A If both auto channel set and auto clock set have been performed successfully:

1 Turn on the TV and select its VIDEO channel or AV mode, then make sure that all necessary stations have been stored in the recorder's memory by using the **PR** button(s).
- If station names (ID — ☞ pg. 47) have also been stored in the recorder's memory, the station name will be displayed at the top left corner of the screen for about 5 seconds each time the recorder is tuned to a different station.
- If you want to set the tuner manually such as to add or skip channels, to change preset positions, or to set or change station names, see pages 44 – 46.

Now you have finished the basic set up and can use your recorder for both playback and recording.

B If auto channel set has succeeded but auto clock set has not:

1 Turn on the TV and select its VIDEO channel or AV mode, then make sure that all necessary stations have been stored in the recorder's memory by using the **PR** button(s).
- If station names (ID — ☞ pg. 47) have also been stored in the recorder's memory, the station name will be displayed at the top left corner of the screen for about 5 seconds each time the recorder is tuned to a different station.
- If you want to set the tuner manually such as to add or skip channels, to change preset positions, or to set or change station names, see pages 44 – 46.

2 Perform "Clock Set" on page 38.

Now you have finished the basic set up and can use your recorder for both playback and recording.

C If both auto channel set and auto clock set have failed:

1 Make sure that the TV aerial cable is connected properly to the recorder (for RF connection), or that the 21-pin SCART cable is connected properly between TV and the recorder (for AV connection). Turn off the recorder power once, then turn the recorder power back on again.

2 Perform "Auto Set Up" on page 6 or "Preset Download" on page 7.

IMPORTANT

- In certain reception conditions, station names may not be stored correctly, and auto Guide Program Number Set may not work properly. If the Guide Program numbers are not set properly, when you timer-record a TV programme using VIDEO Plus+, the recorder will record a TV programme of a different station. When programming the timer using VIDEO Plus+, be sure to check that the preset position corresponding to the broadcasting station you wish to record has been selected (☞ pg. 16, "VIDEO Plus+ Timer Programming").
- Your video recorder memorizes all detected stations even if reception of some of them is poor. In these cases picture quality may be poor. To delete those stations which have an unacceptable picture ☞ "Delete A Channel" on page 45.
- If any of the above problems occur, refer to pages 44 – 46 to input station names (☞ "Set Stations") or delete unnecessary stations (☞ "Delete A Channel"). You can also change station preset positions (☞ "Change Station Preset Position").
- **For RF connection users:** In certain reception conditions, the Video Channel may not be set correctly and interference may appear in the TV picture while the recorder's power is on. Set your Video Channel manually. ☞ pg. 40, "Video Channel Set".

If you have any difficulty with the above procedures call the JVC Customer Service Hot Line on 0208 208 7654

T-V Link Functions

When you connect the recorder and your TV via a fully-wired 21-pin SCART cable (☞ pg. 5), the following functions are available. You can use these functions only with a TV offering T-V Link, etc.*
For details, refer to the instruction manual for your TV.

* *Compatible with TVs offering T-V Link, EasyLink, Megalogic, SMARTLINK, Q-Link, DATA LOGIC or NexTView Link via fully-wired 21-pin SCART cable. The degree of compatibility and available functions may differ by system.*

NexTView Link

You can download the EPG (Electronic Programme Guide) information from your TV for timer-programming on the recorder.
For details, refer to the instruction manual for your TV.

TV Auto Power On

You can turn on the TV and set it to video mode automatically whenever you play a tape.
For details, refer to the instruction manual for your TV.

VCR Auto Standby

You can use your TV's remote control to turn off the recorder.
For details, refer to the instruction manual for your TV.

Direct Rec

You can start recording the programme that you are watching on your TV with simple operation. Press and hold **RECORD** and press **PLAY** on the remote control, or press **RECORD** on the recorder.
Follow the procedure below to use this function.

Turn on the TV and select the VIDEO channel (or AV mode).

1 TURN ON THE RECORDER

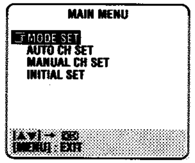
Press ⏻/I.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

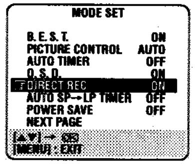
3 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.



4 SELECT DIRECT REC MODE

Press △▽ to move the highlight bar (pointer) to "DIRECT REC", then press **OK** or ▷ to set to "ON".



B.E.S.T. ON
PICTURE CONTROL AUTO
AUTO TIMER OFF
O.S.D. ON
DIRECT REC ON
AUTO SP→LP TIMER OFF
POWER SAVE OFF
NEXT PAGE

5 RETURN TO NORMAL SCREEN

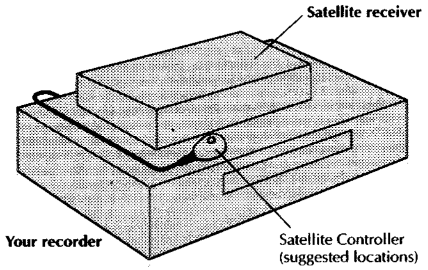
Press **MENU**.

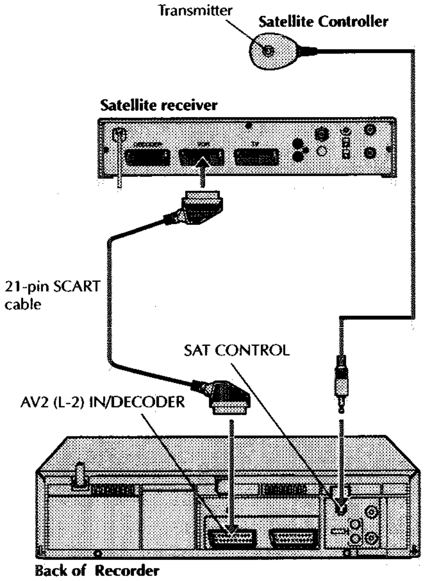
NOTES:

- *If "DIRECT REC" is set to "OFF", the **RECORD** button functions as described in "Recording" (☞ pg. 14).*
- *During the Direct Rec, "– –" appears on the display panel.*
- *When you perform T-V LINK functions, be sure to use a fully-wired 21-pin SCART cable.*
- *Direct Rec is not possible with a scrambled broadcast.*
- *To record a scrambled broadcast, set "DIRECT REC" to "OFF" and follow the procedure described in "Recording" on page 14.*

Satellite Receiver Control Setting

The following procedure is required if you receive satellite channels through a satellite receiver. Around 20 seconds before VIDEO Plus+ timer recording (☞ pg. 16) or Express timer programming (☞ pg. 18) starts, the recorder sets its input mode to "L-2" and automatically switches the satellite receiver's channels using the provided Satellite Controller.





Installing Satellite Controller

1 SITUATE SATELLITE CONTROLLER

Place the Satellite Controller so that the path between its transmitter and the satellite receiver's remote sensor is unobstructed.

2 ATTACH SATELLITE CONTROLLER

Fix securely using the adhesive strip attached on the back of the Satellite Controller.

3 MAKE CONNECTIONS

Be sure to connect the recorder's AV2 (L-2) IN/DECODER connector to the satellite receiver's 21-pin SCART connector.

NOTE:

When connecting your satellite receiver, refer to its instruction manual.

4 CONNECT SATELLITE CONTROLLER TO RECORDER

Connect the Satellite Controller to the SAT CONTROL connector on the rear panel.

Setting satellite receiver's brand and channel

After installation, set the satellite receiver's brand and channel correctly; otherwise, the Satellite Controller cannot work correctly.

Turn on the TV and select the VIDEO channel (or AV mode).

1 TURN ON SATELLITE RECEIVER

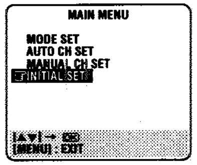
Turn on the satellite receiver's power.

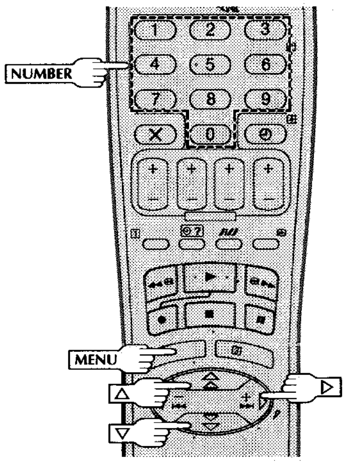
2 ACCESS MAIN MENU SCREEN ON RECORDER

Press **MENU**.

3 ACCESS INITIAL SET SCREEN

Press ∆∇ to move the highlight bar (pointer) to "INITIAL SET", then press **OK** or ▷.


MAIN MENU
MODE SET
AUTO CH SET
MANUAL CH SET
☞ INITIAL SET
[▲▼] → OK
[MENU] : EXIT



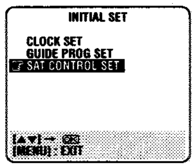
SATELLITE TUNER BRAND	CODE
JVC	73
AMSTRAD	60, 61, 62, 63, 92
CANAL SATELLITE	81
CANAL +	81
D-BOX	85
ECHOSTAR (VIA DIGITAL)	82
FINLUX	68
FORCE	89
GALAXIS	88
GRUNDIG	64, 65
HIRSCHMANN	64, 78
ITT NOKIA	68
JERROLD	75
KATHREIN	70, 71
LUXOR	68
MASCOM	93
MASPRO	70
NOKIA	87
PACE	65, 67, 74, 86, 92
PANASONIC	74
PHILIPS	66, 84
RFT	69
SAGEM	83
SALORA	68
SIEMENS	64
SKYMASTER	69
TPS	83
TRIAX	91
WISI	64

NOTES:

- *The Satellite Controller may not work with all types of satellite receiver.*
- *For some satellite receivers, you need to set its channel input mode to 2-digit.*
- *If your satellite receiver has more than two channel mode, be sure to set to "All Channel Mode". For details, refer to the instruction manual of the satellite receiver.*

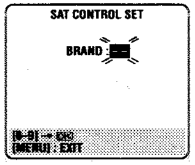
4 ACCESS SAT CONTROL SET SCREEN

Press ∆∇ to move the highlight bar (pointer) to "SAT CONTROL SET", then press **OK** or ▷.


INITIAL SET
CLOCK SET
GUIDE PROG SET
☞ SAT CONTROL SET
[▲▼] → OK
[MENU] : EXIT

5 ENTER SATELLITE RECEIVER'S BRAND

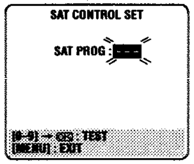
Press the appropriate **NUMBER** keys to enter the brand code from the list in the left column, then press **OK**.


SAT CONTROL SET
BRAND : --
[0–9] → OK
[MENU] : EXIT

- If the brand code you entered is invalid, the code field is reset. Enter the correct brand code again.
- If the recorder is in playback or recording, you cannot set the brand code.

6 SELECT SATELLITE RECEIVER'S CHANNEL

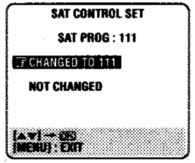
Press the appropriate **NUMBER** keys to enter the channel position on the satellite receiver, then press **OK**.


SAT CONTROL SET
SAT PROG : ---
[0–9] → OK : TEST
[MENU] : EXIT

- You can select the channel position between 1 to 999.
- After pressing **OK**, the recorder enters the Test mode.

7 CHECK RESULT OF TEST

If the satellite receiver's channel number has been changed to the same channel as you set in step 6...


SAT CONTROL SET
SAT PROG : 111
☞ CHANGED TO 111
NOT CHANGED
[▲▼] → OK
[MENU] : EXIT

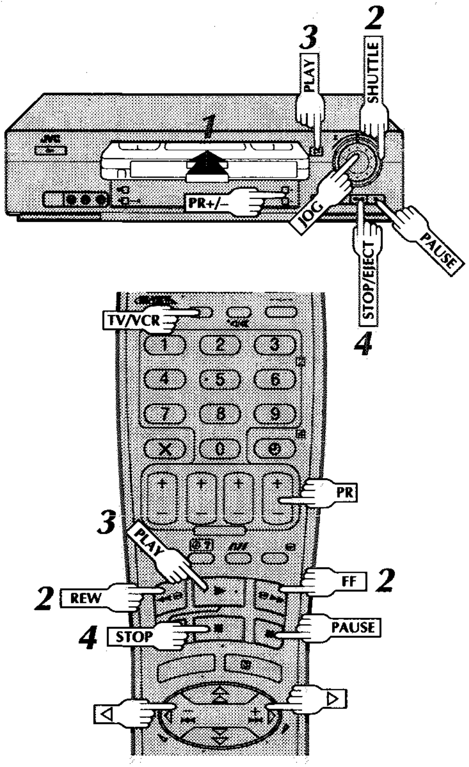
Press ∆∇ to move the highlight bar (pointer) to "CHANGED TO ...", then press **OK** or ▷ to finish the Sat Control Set mode.

If the satellite receiver's channel number has not been changed correctly...

Press ∆∇ to move the highlight bar (pointer) to "NOT CHANGED", then press **OK** or ▷. Then perform the procedure again from step **5**.

Playback

Turn on the TV and select the VIDEO channel (or AV mode).



The easiest, most basic operation possible with your video recorder is tape playback. Already-recorded signals on a video tape are read by your video recorder and displayed on your TV just like a TV programme.

1 LOAD A CASSETTE

Make sure the window side is up, the rear label side is facing you and the arrow on the front of the cassette is pointing towards the recorder. Don't apply too much pressure when inserting.

- The recorder power comes on automatically and the counter is reset to 0:00:00.
- If the record safety tab has been removed, playback begins automatically.

2 FIND PROGRAMME START POINT

If the tape is advanced past the start point, press **REW** or turn the **SHUTTLE** ring to the left. To go forward, press **FF** or turn the **SHUTTLE** ring to the right.

3 START PLAYBACK

Press **PLAY**. "BEST" appears blinking in the recorder's display panel during automatic tracking (☞ pg. 22).

- Playback picture quality of LP recordings will not be as high as SP recordings.

4 STOP PLAYBACK

Press **STOP** on the remote or **STOP/EJECT** on the recorder's front panel. Then press **STOP/EJECT** to remove the cassette.

Clean the video heads using a dry cleaning cassette — TCL-2UX — when:

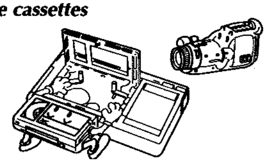
- Rough, poor picture appears while a tape is played back.
- The picture is unclear or no picture appears.
- "USE CLEANING CASSETTE" appears on the screen (only with "O.S.D." set to "ON" (☞ pg. 33.)

INFORMATION

When using the AV connection (☞ pg. 5), initiating playback causes the VCR indicator to light and the TV to automatically enter AV mode. To return the TV to TV mode after playback is complete, press **TV/VCR** so that the VCR indicator turns off.

* Depending on the type of TV used, **TV/VCR** button does not always function as described above.

Usable cassettes

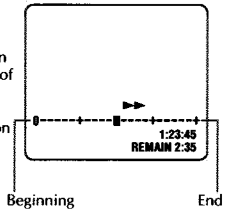


- Compact VHS camcorder recordings can be played on this video recorder. Simply place the recorded cassette into a VHS Cassette Adapter and it can be used just like any full-sized VHS cassette.
- This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS signals only. It is not possible to play back a recorded Super VHS tape.

Tape Position Indicator

The tape position indicator appears on screen when, from the Stop mode, you press **FF**, **REW** or perform an Index Search. The position of "■" in relation to "0" (beginning) or "+" (end) shows you where you are on the tape.

"O.S.D." (☞ pg. 33) must be set to "ON", or the indicator will not appear.

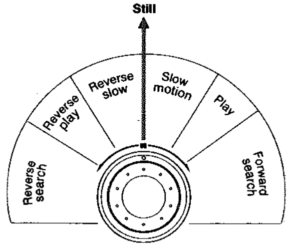


NOTE:

Depending on the type of tape used, there may be times when the indication is not correct.

NOTE:

*Refer to the **SHUTTLE** ring illustration below as you read the following procedures.*



Still Picture/Frame-By-Frame Playback

1 PAUSE DURING PLAYBACK

Press **PAUSE**. If there is vertical jitter, use the **PR** buttons to correct the picture.

2 ACTIVATE FRAME-BY-FRAME PLAYBACK

Turn the **JOG** dial to the right for forward frame-by-frame playback, or to the left for reverse frame-by-frame playback.

OR

Press **PAUSE**. Each time **PAUSE** is pressed the tape will advance one frame.

OR

Press ◁ or ▷. Each time one of these buttons is pressed the tape will move one frame in the direction of the arrow.

To resume normal playback, press **PLAY**.

Slow Motion

1 ACTIVATE SLOW-MOTION PLAYBACK

During playback or still picture, turn the **SHUTTLE** ring to the right for forward slow motion, or to the left for reverse slow motion (refer to the illustration above).

OR

During still picture, press and hold **PAUSE** for 2 seconds, then release. Press and release again to return to still picture.

OR

During still picture, press and hold ◁ or ▷. Release to return to still picture.

To resume normal playback, press **PLAY**.

Variable-Speed Search

1 ACTIVATE VARIABLE-SPEED SEARCH

During playback or still, turn the **SHUTTLE** ring to the right for forward variable-speed search, or to the left for reverse variable-speed search (refer to the illustration on the left).

OR

During playback, press ◁ or ▷.

- The more times you press, the faster the playback picture moves.
- To decrease speed, press the button for the opposite direction.

To resume normal playback, press **PLAY**.

High-Speed Search

1 ACTIVATE HIGH-SPEED SEARCH

During playback or still, turn the **SHUTTLE** ring all the way to the right for forward high-speed search, or to the left for reverse high-speed search. Releasing **SHUTTLE** resumes still picture playback.

- For forward high-speed search, turn the **SHUTTLE** ring all the way to the right and release it within 1 second.
- For reverse high-speed search, turn the **SHUTTLE** ring all the way to the left and release it within 1 second.

OR

During playback or still picture, press **FF** for forward high-speed search, or **REW** for reverse high-speed search.

To resume normal playback, press **PLAY**.

NOTE:

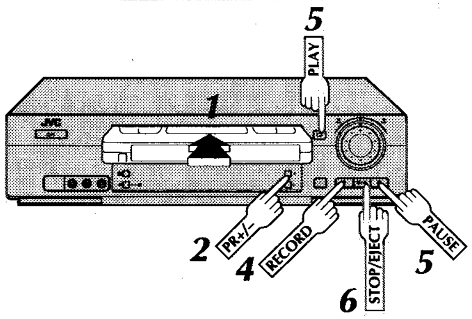
*For short searches, press and hold **FF** or **REW** during playback or still picture. When released, normal playback resumes.*

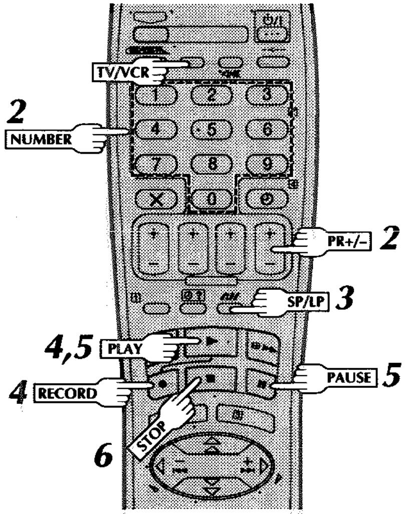
ATTENTION

- In the high-speed search, still, slow-motion or frame-by-frame playback mode,
  - the picture will be distorted.
  - noise bars will appear.
  - there will be a loss of colour with a tape recorded in LP mode.
- Picture may not appear during high-speed search with a tape recorded in LP mode.

Recording

Turn on the TV and select the VIDEO channel (or AV mode).





TV signals being received by the recorder's built-in tuner can be recorded onto a video tape. You can "capture" a TV programme using your video recorder.

1 LOAD A CASSETTE

Insert a cassette with the record safety tab intact (See below).

- The counter is reset to 0:00:00 and the recorder power comes on automatically.

2 CHOOSE A PROGRAMME

Press **PR** +/– or the **NUMBER** keys to select the preset you wish to record.

3 SET TAPE SPEED

Press **SP/LP** (**///**). Check the SP/LP indicator on the recorder display panel to confirm the selected tape speed.

- Picture quality of LP recordings will not be as high as on SP recordings.

4 START RECORDING

Press and hold **RECORD** and press **PLAY** on the remote control, or press **RECORD** on the recorder.

B.E.S.T. takes place at the beginning of both the first SP and the first LP recording after inserting the cassette (☞ pg. 22).

If "DIRECT REC" is set to "ON", the programme that appears on the TV screen will be recorded (☞ pg. 9).

- You can not change the preset whilst recording is in progress. To change the preset, see step **5**.

5 PAUSE/RESUME RECORDING

Press **PAUSE**. Press **PLAY** to resume recording.

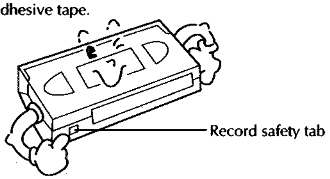
- During the Record Pause mode, you can change the preset by pressing the **PR +/–** buttons or the **NUMBER** keys.

6 STOP RECORDING

Press **STOP** on the remote control or **STOP/EJECT** on the recorder. Then press **STOP/EJECT** to remove the cassette.

Accidental erasure prevention

- To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



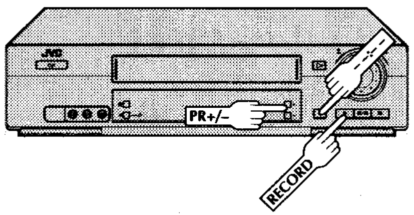
INFORMATION

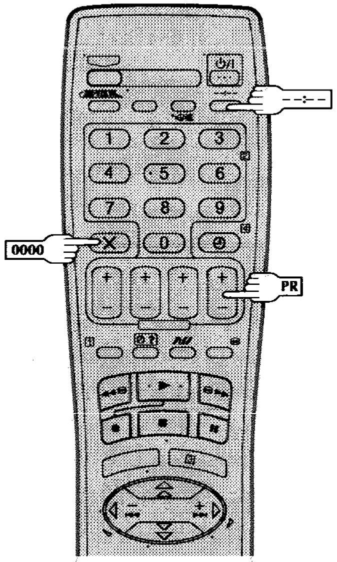
When using the AV connection (☞ pg. 5), you can switch between TV mode and AV mode by pressing **TV/VCR**.

* Depending on the type of TV used, **TV/VCR** button does not function as described above.

Recording Resume Function

If there is a power outage during recording (or Instant Timer Recording or timer recording), the recording will resume automatically when power is restored to the recorder unless the recorder's memory backup has expired.





Record One Programme While Watching Another

1 SELECT PRESET TO WATCH

Once recording is in progress, all you need to do is to set the preset controls on the TV for the station you wish to view.

- The programme selected with the TV's preset controls appears on the TV screen while the one selected with the recorder's **PR** buttons is recorded on the tape.

Elapsed Recording Time Indication

You can check the exact time of a recording.

1 SET COUNTER DISPLAY

Press – –:– – until a counter reading appears on the display panel.

2 RESET COUNTER

Press **0000** before starting recording or playback.

- The counter is reset to "0:00:00" and shows the exact elapsed time as the tape runs.

Instant Timer Recording (ITR)

This easy method allows you to record for any length of time from 30 mins. to 6 hours (selectable in 30-min. increments), and shuts off the recorder after recording is finished.

1 START RECORDING

Press **RECORD** on the recorder.

2 ENGAGE ITR MODE

Press **RECORD** again. "◌" blinks and 0:30 appears on the front display panel.

3 SET RECORDING DURATION

If you want to record for more than 30 minutes, press **RECORD** to extend the time. Each press extends recording time by 30 minutes.

NOTE:

*You can only perform ITR using the **RECORD** button on the recorder's front panel.*

Tape Remaining Time

1 DISPLAY REMAINING TIME

Press – –:– – until the time remaining on the tape appears.

- The display panel shows the tape remaining time with "▙" displayed.
- By pressing the – –:– – button, you can change the display to show the counter reading, preset position*, clock time or tape remaining time.

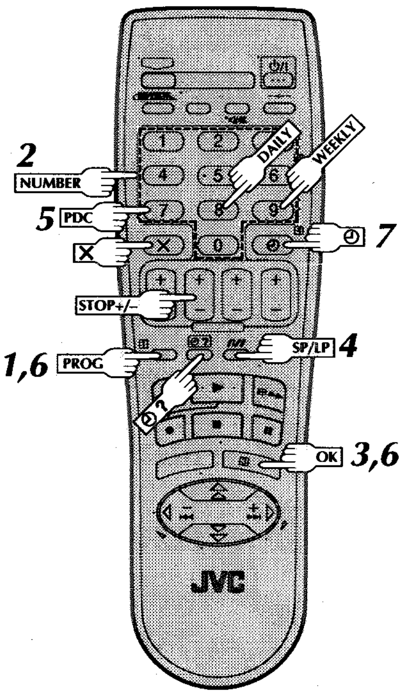
* *Preset position is not displayed during playback.*

NOTE:

Depending on the type of tape used, there may be times when the tape remaining time reading may not appear right away, or is not correct. "– –:– –" may sometimes appear, or the display may blink on occasion.

VIDEO Plus+ Timer Programming

Before performing VIDEO Plus+ Timer Programming:
- Make sure that the recorder's built-in clock is set properly.
- Insert a cassette with the safety tab in place. The recorder will come on automatically.
- Turn on the TV and select the VIDEO channel (or AV mode).

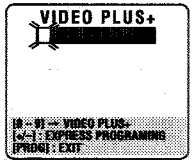


With VIDEO Plus+, timer programming is greatly simplified because each TV programme has a corresponding code number which your recorder is able to recognise.

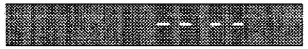
1

ACCESS VIDEO PLUS+ SCREEN

Press **PROG**.



The front display panel looks like this:

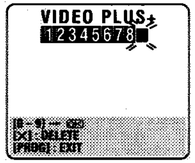


2

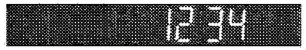
ENTER PLUSCODE NUMBER

Press the **NUMBER** keys to enter the PlusCode number of the programme you wish to record.

- If you make a mistake, press X and input the correct number.



The PlusCode number you enter appears on the front display panel:



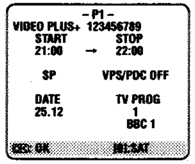
The display panel shows only a 4-digit number.

3

ACCESS VIDEO PLUS+ PROGRAM SCREEN

Press **OK**, and the VIDEO Plus+ Program screen appears (if you're just starting out, "P1" appears).

The display panel shows the programme start time. Pressing ◷ ? changes the display to the programme stop time, then the date and preset position.



IMPORTANT
Make sure the preset position number you wish to record is displayed; if not, see "VIDEO Plus+ Setup" on page 39 and set the Guide Program number for that PlusCode number correctly.

- If the number you entered is invalid, "ERROR" appears on the screen and "Err" appears on the display panel. Press X and input a valid PlusCode number.
- If the "GUIDE PROG SET" screen appears, see "ATTENTION – Regarding Guide Program Number Set" on page 17.

4

SET TAPE SPEED

Press **SP/LP (////)** to set the tape speed.

5

SET PDC MODE

Press **PDC** to select "ON" or "OFF".
If "VPS/PDC ON" is displayed on the screen or "VPS/PDC" is lit on the display panel, PDC is set to ON.
If "VPS/PDC OFF" is displayed on the screen or "VPS/PDC" is not lit on the display panel, PDC is set to OFF.
☞ "PDC Recording" in the column below.

- VPS (Video Programme System) recording is not currently available in the U.K. and not possible with this recorder.

6

RETURN TO NORMAL SCREEN

Press **PROG** or **OK**. "PROGRAM COMPLETED" appears on the screen for about 5 seconds, then normal screen appears. If the timer programme is overlapped with another one that was already set, "PROGRAM OVERLAPPED" appears on screen and "Err" appears on the front display panel. (☞ pg. 21)

- Repeat steps **1** – **6** for each additional programme.

7

ENGAGE RECORDER'S TIMER MODE

Press ◷ (**TIMER**). The recorder turns off automatically and ◷ appears on the display panel.

- To disengage the timer, press ◷ (**TIMER**) again.

NOTES:

- *To Change The Stop Time . . .*
  *. . . press **STOP +/–** after pressing **OK** in step 3. You can compensate for anticipated programme schedule delays this way.*
- *To Timer-Record Weekly Or Daily Serials . . .*
  *. . . after pressing **OK** in step 3, press **WEEKLY** (**NUMBER** key "9") for weekly serials or **DAILY** (**NUMBER** key "8") for daily serials (Monday – Friday). Either "WEEKLY" or "DAILY" appears on the screen. Pressing the button again makes the corresponding indication disappear.*
- *You can programme this recorder to timer-record as many as 8 programmes. If you try to programme the recorder to record a ninth, "PROGRAM FULL" appears on screen and "FULL" appears on the front display panel. To record the extra programme, you must first cancel any unnecessary programmes (☞ pg. 20).*
- *It is not possible to timer-record a TV programme with a PlusCode number which starts with "0".*

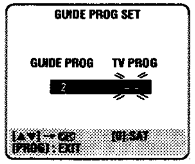
Satellite Receiver Users
To timer-record a satellite broadcast using VIDEO Plus+:
1. Perform "Satellite Receiver Control Setting" (☞ pg. 10).
2. Perform steps **1** – **7**. In step **3**, the display panel shows "L2" for the preset position. In step **5**, you cannot set PDC to ON.
3. Leave the satellite receiver's power on.

ATTENTION

Regarding Guide Program Number Set

"GUIDE PROG SET" appears after performing step **3** if the Guide Program number for the PlusCode number you entered has not been set.

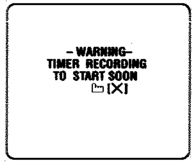
- If you want to set the Guide Program number for the satellite broadcast station, press the **NUMBER** key "0" to change "TV PROG" to "SAT". Press △▽ to input the preset position number on which your recorder or satellite receiver receives that station, then press **OK** or ▷ to set the Guide Program Number. The VIDEO Plus+ Program screen appears.



(Ex.) To timer-record a BBC2 programme with VIDEO Plus+.
* If your recorder receives BBC2 on the preset position 2, press **OK** or ▷ after entering "2" using △▽ buttons.

Timer Warning

If you have programmed your recorder to timer-record a programme or a series of programmes, a warning appears on the screen to tell you that the recording is due to start in 5 minutes.



NOTES:

- *The warning only appears if you're not in the Timer mode at the time.*
- *If this recorder is being used as the player for tape dubbing, the warning screen will be recorded on the tape in the other video recorder.*

The warning blinks for the entire 5 minutes leading up to the start of timer recording. To clear the display, press X.

PDC Recording

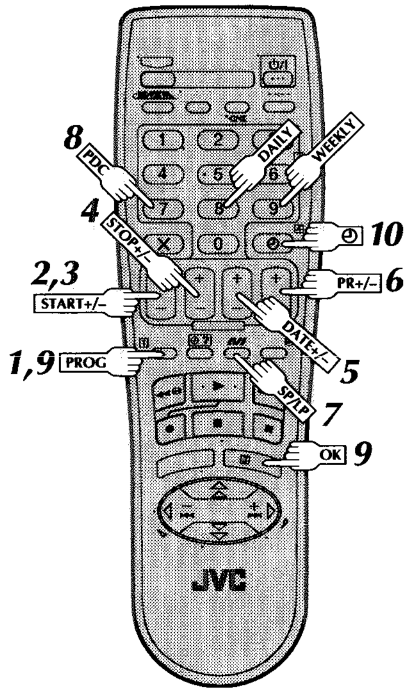
Now available from some TV stations, PDC (Programme Delivery Control) is a service designed to assure safe, accurate timer recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over the advertised times which you may have preset into the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed from what has been advertised. PDC is currently available nationally on BBC1, BBC2, Ch.4 and Ch.5, except from a few small relay transmitters. Ch.3 operates a PDC service in most areas. All channels intend to offer this service in due course. Check your TV programme listing guide for latest information. If the channel you intend to record does not offer a PDC service your recorder will not start recording if PDC has been selected. Be sure to set PDC to "OFF" if PDC is not available on your selected channel (☞ step **5** above).

NOTES:

- *PDC recording is also possible when a satellite receiver or a cable system is connected to AV2 (L-2) IN/DECODER on your recorder.*
- *PDC recording is also possible via the AV1 (L-1) IN/OUT connector.*

Express Timer Programming

Before performing Express Timer Programming:
- Make sure that the recorder's built-in clock is set properly.
- Insert a cassette with the safety tab in place. The recorder will come on automatically.
- Turn on the TV and select the VIDEO channel (or AV mode).



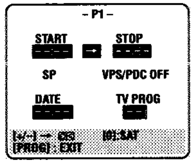
If you don't know the PlusCode number for the programme you wish to record, use the following procedure to set your recorder to timer-record the programme.

1 ACCESS VIDEO PLUS+ SCREEN

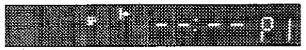
Press **PROG**.

2 ACCESS PROGRAMME SCREEN

Press **START +/–**. (If you're just starting out, "P1" appears.)



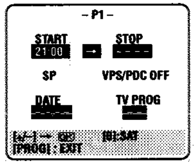
The front display panel looks like this:



3 ENTER PROGRAMME START TIME

Press **START +/–** to enter the time you want recording to start.

- Press and hold **START +/–** to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.



The front display panel looks like this:

4 ENTER PROGRAMME STOP TIME

Press **STOP +/–** to enter the time you want recording to stop.

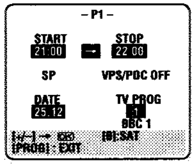
- Press and hold **STOP +/–** to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.

5 ENTER PROGRAMME DATE

Press **DATE +/–** to enter the date on which you wish to record. (The current date first appears on screen. The date you enter will appear in its place.)

6 ENTER PRESET POSITION

Press **PR +/–** to enter the preset position corresponding to the broadcasting station you wish to record.



7 SET TAPE SPEED

Press **SP/LP (/////)** to set the tape speed.

8 SET PDC MODE

Press **PDC** to select "ON" or "OFF".
If "VPS/PDC ON" is displayed on the screen or "VPS/PDC" is lit on the display panel, PDC is set to ON.
If "VPS/PDC OFF" is displayed on the screen or "VPS/PDC" is not lit on the display panel, PDC is set to OFF.
☞ "PDC Recording" in the right column.

- VPS (Video Programme System) recording is not currently available in the U.K. and not possible with this recorder.

9 RETURN TO NORMAL SCREEN

After confirming all information is correct, press **PROG** or **OK**. "PROGRAM COMPLETED" appears on the screen for about 5 seconds, then normal screen appears. If the timer programme is overlapped with another one that was already set, "PROGRAM OVERLAPPED" appears on screen and "Err" appears on the front display panel. (☞ pg. 21)

- Repeat steps **1** – **9** for each additional programme.

10 ENGAGE RECORDER'S TIMER MODE

Press ⊕ (**TIMER**). The recorder turns off automatically and ⊕ appears on the display panel.

- To disengage the timer, press ⊕ (**TIMER**) again.

To Timer-Record Weekly Or Daily Serials . . .
. . . anytime during steps **2** through **9**, press **WEEKLY** (**NUMBER** key "9") for weekly serials or **DAILY** (**NUMBER** key "8") for daily serials (Monday – Friday). Either "WEEKLY" or "DAILY" appears on the screen. Pressing the button again makes the corresponding indication disappear.

NOTE:

You can programme this recorder to timer-record as many as 8 programmes. If you try to programme the recorder to record a ninth, "PROGRAM FULL" appears on screen and "FULL" appears on the front display panel. To record the extra programme, you must first cancel any unnecessary programmes (☞ pg. 20).

Satellite Receiver Users
To timer-record a satellite broadcast using Express Timer Programming:
1. Perform "Satellite Receiver Control Setting" (☞ pg. 10).
2. Perform steps **1** – **10**. In step **6**, press the **NUMBER** key "0" to change "TV PROG" to "SAT". The display panel shows "L2" for the preset position. Then press **PR +/–** to enter the preset position for the satellite broadcast. In step **8**, you cannot set PDC to ON.
3. Leave the satellite receiver's power on.

PDC Recording

Now available from some TV stations, PDC (Programme Delivery Control) is a service designed to assure safe, accurate timer recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over the advertised times which you may have preset into the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed from what has been advertised. PDC is currently available nationally on BBC1, BBC2, Ch.4 and Ch.5, except from a few small relay transmitters. Ch.3 operates a PDC service in most areas. All channels intend to offer this service in due course. Check your TV programme listing guide for latest information. If the channel you intend to record does not offer a PDC service your recorder will not start recording if PDC has been selected. Be sure to set PDC to "OFF" if PDC is not available on your selected channel.
(☞ step **8** in the left column).

NOTES:

- *Set the start time (PDC time) exactly as advertised in the TV listing. A different time than advertised will result in no recording.*
- *PDC recording is also possible when a satellite receiver or a cable system is connected to AV2 (L-2) IN/DECODER on your recorder.*
- *PDC recording is also possible via the AV1 (L-1) IN/OUT connector.*

Timer Warning

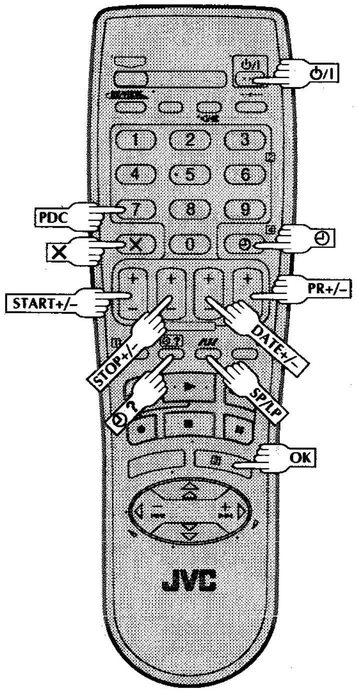
If you have programmed your recorder to timer-record a programme or a series of programmes, a warning appears on the screen to tell you that the recording is due to start in 5 minutes.

– WARNING–
TIMER RECORDING
TO START SOON
[X]

NOTES:

- *The warning only appears if you're not in the Timer mode at the time.*
- *If this recorder is being used as the player for tape dubbing, the warning screen will be recorded on the tape in the other video recorder.*

The warning blinks for the entire 5 minutes leading up to the start of timer recording. To clear the display, press X.



NOTE:

You can also check the programmes on the display panel even if the recorder's power is off (unless the recorder is in the Power Save mode ☞ pg. 34) or the recorder is in the Timer mode; however, it is not possible to cancel or replace the programmes.

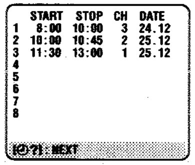
Check, Cancel And Replace Programmes

1 DISENGAGE TIMER MODE

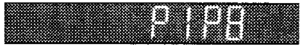
Press ⊙, then press ⏻/I.

2 ACCESS PROGRAMME CHECK SCREEN/DISPLAY

Press ⊙ ?.

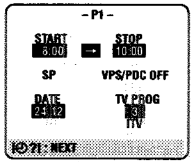


```
   START  STOP  CH  DATE
1   8:00  10:00  3  24.12
2  10:00  10:45  2  25.12
3  11:30  13:00  1  25.12
4
5
6
7
8
[⊙?] : NEXT
```

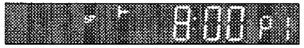


3 ACCESS PROGRAMME SCREEN/ DISPLAY

Press ⊙ ? again to check more information. Each time you press ⊙ ?, the next programme's information appears.



```
         – P1 –
 START         STOP
  8:00    →    10:00
 SP        VPS/PDC OFF
 DATE        TV PROG
 24.12          3
               ITV
[⊙?] : NEXT
```



- The display panel shows the programme start time. Pressing **OK** changes the display to the programme stop time, then the date and the preset position.

To cancel or replace a programme...

4 CANCEL OR REPLACE A PROGRAMME

Press X to cancel a programme. To replace a programme, press the appropriate button: **START+/–, STOP+/–, DATE+/–, PR+/–, SP/LP (/////), PDC**.

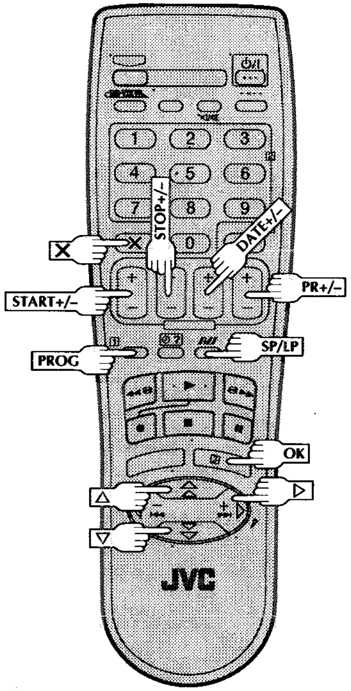
- You can change "TV PROG" to "SAT" for the preset position by pressing the **NUMBER** key "0".

5 RETURN TO NORMAL SCREEN/ DISPLAY

Press ⊙ ? as many times as necessary. If there are still some programmes to be recorded, go on to step **6**.

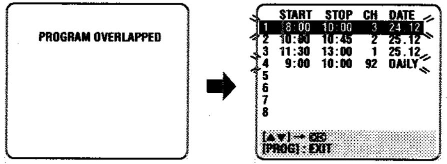
6 RETURN TO TIMER MODE

Press ⊙.



When programmes overlap each other

If "PROGRAM OVERLAPPED" appears, you have another programme overlapping the programme you have just made. The Program Check screen appears and conflicting programmes will start blinking.



```
PROGRAM OVERLAPPED
```

```
   START  STOP  CH  DATE
1   8:00  10:00  3  24.12
2  10:00  10:45  2  25.12
3  11:30  13:00  1  25.12
4   9:00  10:00 92  DAILY
5
6
7
8
[▲▼] → OK
[PROG] : EXIT
```

EX. Programme 1 (you have just made) and Programme 4 overlap each other.

1 CONFIRM OVERLAPPING PROGRAMMES

Overlapping programmes blink on the screen.

2 SELECT PROGRAMME TO MODIFY

Press △▽, then press **OK** or ▷.

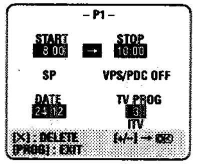
- You can only select one of the overlapping programmes.

NOTE:

*If you do not mind this overlap, press **PROG** to finish the timer programme setting. The programme with the lower programme number will be recorded and the other one will not be recorded correctly. Without doing anything for about 1 minutes, the recorder will finish the timer programming.*

3 CANCEL OR CHANGE PROGRAMME SETTING

To cancel a programme, press X when the Program screen you do not want is shown. "PROGRAM COMPLETED" appears on the screen for about 5 seconds, then normal screen appears.



```
         – P1 –
 START         STOP
  8:00    →    10:00
 SP        VPS/PDC OFF
 DATE        TV PROG
 24.12          3
               ITV
[X] : DELETE    [+/–] → OK
[PROG] : EXIT
```

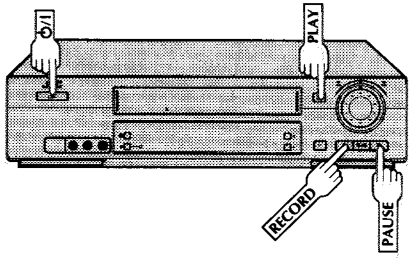
To change a programme, press the appropriate button: **START+/–, STOP+/–, DATE +/–, PR +/–, SP/LP** (**/////**) and/or **PDC** when the Program screen on which you want to make changes is shown, then press **OK**. "PROGRAM COMPLETED" appears on the screen for about 5 seconds, then normal screen appears.

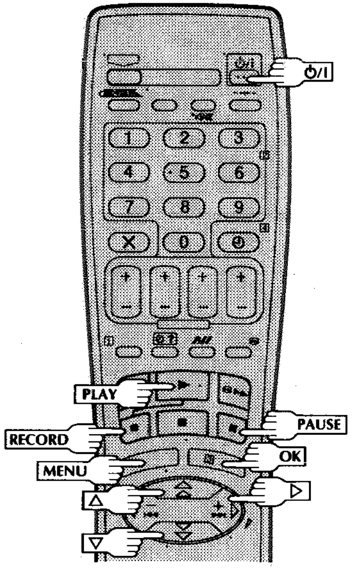
NOTE:

If the overlap is not yet solved or another overlap occurs with the timer programme setting made last after making correction on a programme, the conflicting programmes will be shown on the Program Check screen again. Repeat the above steps again until the overlap is solved.

Playback/ Recording According To Tape Characteristics

Turn on the TV and select the VIDEO channel (or AV mode).





B.E.S.T. Picture System

The B.E.S.T. (Biconditional Equalised Signal Tracking) system checks the condition of the tape in use during recording and playback, and compensates to provide the highest-possible recording and playback pictures. The default setting for both recording and playback is "ON".

1 TURN ON THE RECORDER

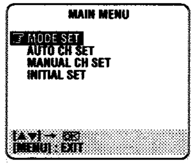
Press ⏻/I.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.



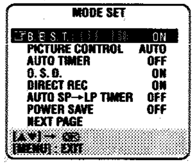
MAIN MENU

MODE SET
AUTO CH SET
MANUAL CH SET
INITIAL SET

[▲▼] → OK
[MENU] : EXIT

4 SELECT B.E.S.T. MODE

Press △▽ to move the highlight bar (pointer) to "B.E.S.T.", then press **OK** or ▷ to set to "ON" or "OFF".



MODE SET

B.E.S.T. ON
PICTURE CONTROL AUTO
AUTO TIMER OFF
O. S. D. ON
DIRECT REC ON
AUTO SP→LP TIMER OFF
POWER SAVE OFF
NEXT PAGE

[▲▼] → OK
[MENU] : EXIT

5 RETURN TO NORMAL SCREEN

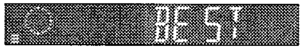
Press **MENU**.

Recording

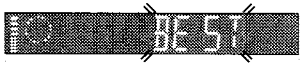
1 START RECORDING

Press and hold **RECORD** and press **PLAY** on the remote, or press **RECORD** on the recorder.

DURING B.E.S.T.



B.E.S.T. COMPLETE



- The recorder spends approximately 7 seconds assessing the condition of the tape, then begins recording.

NOTES:

- *The B.E.S.T. system works for both SP and LP modes only after a tape has been inserted and the Record mode is first initiated. It does not work during recording.*
- *The B.E.S.T. system does not work while Auto Satellite Prog recording is in progress (☞ pg. 26).*
- *In the case of timer recording, the B.E.S.T. system works before recording is initiated.*
- *Once the cassette is ejected, the B.E.S.T. data is cancelled. The next time the cassette is used for recording, B.E.S.T. is re-performed.*
- *Pressing the recorder's **RECORD** button while "BEST" is displayed does not start Instant Timer Recording (☞ pg. 15).*

ATTENTION

*Since the B.E.S.T. system works before recording actually starts, there is a delay of approximately 7 seconds after **RECORD** and **PLAY** on the remote are pressed, or **RECORD** on the recorder is pressed. To make sure you record the desired scene or programme in its entirety, first perform the following steps:*

*1) Press and hold **PAUSE** and press **RECORD** to engage the RECORD PAUSE mode.*
- *The recorder then automatically checks the condition of the tape and, after approximately 7 seconds, re-enters RECORD PAUSE.*

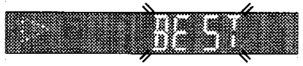
*2) Press **PLAY** when you are ready to start recording.*
- *If you want to bypass the B.E.S.T. system and begin recording immediately, set "B.E.S.T." to "OFF" in step 4 on page 22.*

Playback

The recorder assesses the quality of the tape once you initiate playback.

1 START PLAYBACK

Press **PLAY**.

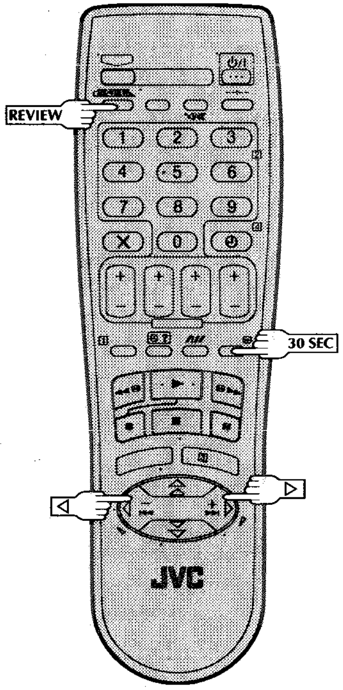


- The recorder adjusts the playback picture quality based on the quality of the tape in use.
- B.E.S.T. is active during Auto Tracking. "BEST" appears blinking on the recorder's display panel.

NOTES:

- *When watching a tape recorded with "B.E.S.T." set to "ON", it is recommended that you leave B.E.S.T. on during playback as well.*
- *When watching a rental tape or one recorded on another video recorder, or when using this recorder as the player for editing, set B.E.S.T. to your preference by performing steps **1** through **5** on page 22.*
- *"BEST" only appears at the beginning of automatic tracking. Even though it doesn't appear after that, the B.E.S.T. function is operative.*

Looking For The Scene You Want



Skip Search

1 SKIP OVER UNWANTED SECTIONS

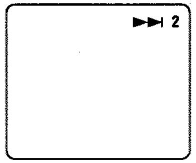
Press **30 SEC** 1 to 4 times during playback. Each press initiates a 30-second period of fast-motion playback. Normal playback resumes automatically.

NOTE:

*To return to normal playback during a Skip Search, press **PLAY**.*

Index Search

Your recorder automatically marks index codes at the beginning of each recording. This function gives you quick access to any one of 9 index codes in either direction.



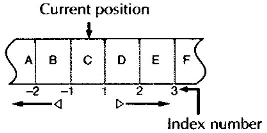
NOTE:

Before starting, make sure the recorder is in the Stop mode.

1 ACTIVATE INDEX SEARCH

Press ◁ or ▷ (|◄◄ or ►►|). "|◄◄ 1" or "►►| 1" is displayed on screen and search begins in the corresponding direction.

- To access index codes 2 through 9, press ◁ or ▷ repeatedly until the correct index number is displayed.
  Ex.: To locate the beginning of B from the current position, press ◁ twice.
  To locate the beginning of D from the current position, press ▷ once.



- When the specified index code is located, playback begins automatically.

Instant ReView

Simply by pressing a single button, the recorder power comes on, rewinds, and begins playback of the last timer-recorded programme. If you have several programmes recorded, you can easily access any of them.

NOTE:

Before starting, make sure that the recorder is off and that the Timer mode is disengaged.

1 ACTIVATE INSTANT REVIEW

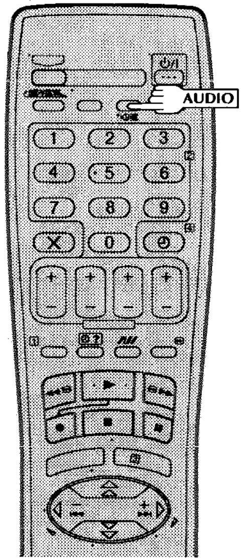
Press **REVIEW**. The recorder power comes on and the recorder searches for the index code indicating the start of the last timer-recorded programme. Once it's found, playback begins automatically.

- The front display panel tells you how many programmes have been timer-recorded. If you have, for example, 3 programmes, "REVIEW" and "3" appear and blink. To watch the first of the 3 programmes, press **REVIEW** three times. The recorder searches and begins playback automatically. You can access a programme as far as 9 index codes away from the current tape position.

NOTES:

- *Instant ReView is not possible while the recorder is in the Timer mode.*
- *The number of recorded programmes will not be displayed on the front display panel after Auto Satellite Prog recording (☞ pg. 26).*

Selecting The Sound You Want



Receiving NICAM Stereo And Bilingual Programmes

Your recorder is equipped with a Digital stereo sound decoder (NICAM), making reception of stereo and bilingual broadcasts possible.

When the recorder is tuned to a different station, the type of broadcast being received will be displayed on the TV screen for a few seconds.

Type of Broadcast Being Received	On-screen Display
Regular Monaural	(none)
NICAM Stereo	ST NICAM
NICAM Bilingual	BIL. NICAM
NICAM Monaural	NICAM

- To listen to a stereo programme, press **AUDIO** until "HI FI L ▷◁ R" appears on the screen.
- To listen to a bilingual programme, press **AUDIO** until "HI FI L ▷" or "HI FI ◁ R" appears on the screen (as required).
- To listen to the Standard (regular monaural) audio while receiving a NICAM broadcast, press **AUDIO** until "NORM" appears on the front display panel or on the screen.

NOTES:

- *The NICAM audio programme will be recorded on the Hi-Fi audio track, and the Standard audio programme on the normal audio track.*
- *If the quality of stereo sound being received is poor, the broadcast will be received in monaural with better quality.*
- *Before playing back a programme recorded in stereo, or a bilingual programme, refer to "Soundtrack Selection" (See below).*
- *"O.S.D." must be set to "ON" or the on-screen displays will not appear (☞ pg. 33).*

Soundtrack Selection

Your video recorder is capable of recording three soundtracks (HI-FI L, HI-FI R and NORM) and will play back the one you select.

During Playback

Pressing **AUDIO** on the remote control changes the soundtrack being played back as follows:

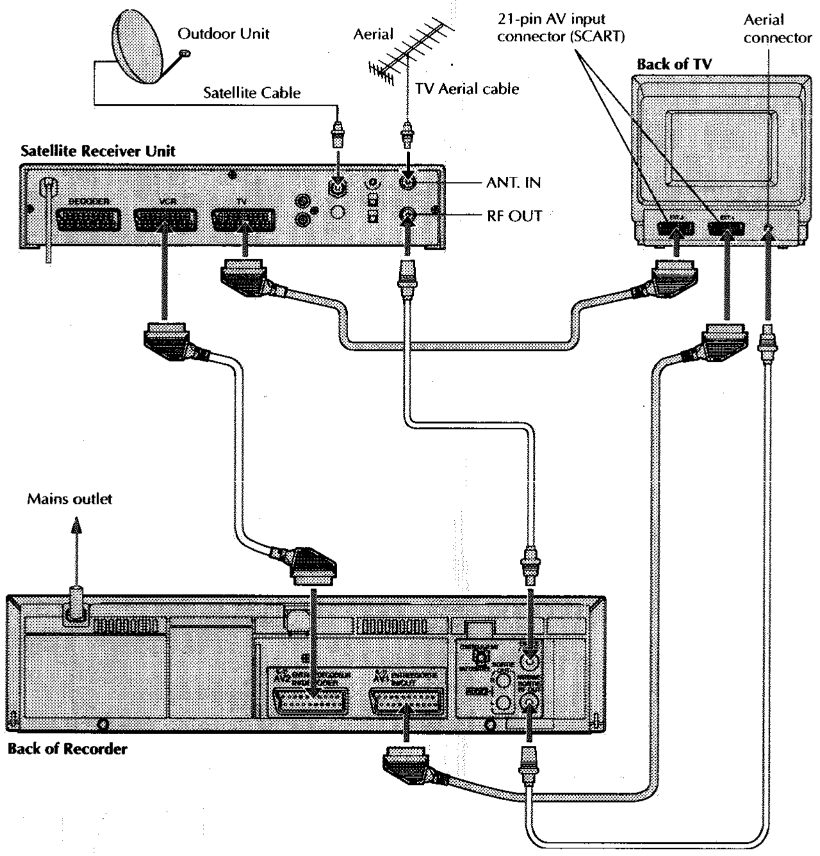
TRACK On-Screen Display	USE
HI FI L ▷◁ R	For Hi-Fi stereo tapes
HI FI L ▷	For main audio of Bilingual tapes
HI FI ◁ R	For sub audio of Bilingual tapes
NORM	For audio-dubbed tapes
HI FI NORM	For audio-dubbed tapes

NOTES:

- *"HIFI L ▷◁ R" should normally be selected. In this mode, Hi-Fi stereo tapes are played back in stereo, and the normal audio track is played back automatically for tapes with only normal audio.*
- *For instructions on recording NICAM stereo and bilingual programmes, see above.*
- *Bilingual programmes are not currently broadcast in the U.K.*
- *"O.S.D." must be set to "ON" or the on-screen displays will not appear (☞ pg. 33).*

Automatic Satellite Programme Recording

This facility allows you to record automatically a satellite programme which is timer-programmed on your external satellite receiver. Connect a satellite receiver to the recorder's AV2 (L-2) IN/DECODER connector and programme the timer on the satellite receiver; the recorder starts recording when the signals input from the satellite receiver to the AV2 (L-2) IN/DECODER connector, and when there is no input signals the recorder stops recording and the power shuts off.



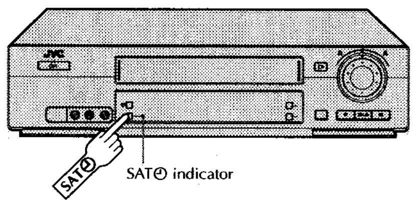
IMPORTANT

When you set "L-2 SELECT" to "SAT" (☞ pg. 32), it is possible to view a satellite broadcast with the TV set to its AV mode even if the recorder is turned off. When the recorder is in Stop mode or recording, press **TV/VCR** on the remote control to turn off the VCR indicator on the display panel.

- If you turn on the recorder when the satellite receiver's power is off, nothing appears on the TV screen. In this case, turn on the satellite receiver, or set the TV to its TV mode, or press **TV/VCR** on the remote control to set the recorder to the video mode.

NOTE:

Refer to the instructions supplied with your satellite receiver.



ATTENTION

- Be sure not to turn on the satellite receiver before the programme is executed; otherwise, the recorder will start recording when the satellite receiver's power is turned on.
- If you have connected another appliance other than a satellite receiver to the AV2 (L-2) IN/DECODER connector, be sure not to engage the Auto Satellite Prog Rec mode; otherwise, the recorder will start recording when the connected appliance's power is turned on.
- Auto Satellite Prog recording and timer-recording cannot be done at the same time.
- When you press and hold the recorder's **SAT◷** button to engage the Auto Satellite Prog Rec mode, if the SAT◷ indicator does not light but instead blinks quickly even though your satellite receiver's power is off, Auto Satellite Prog Recording will not work properly with that satellite receiver*.
  If this is the case, perform "Express Timer Programming" (☞ pg. 18) to timer-record a satellite programme.
  **Some satellite receivers output signals even if the power is off. Auto Satellite Prog Recording is not possible with those satellite receivers.*

Before performing the following steps:
- Make sure the satellite receiver is connected to the recorder's AV2 (L-2) IN/DECODER connector. (☞ pg. 26)
- Programme the timer on the satellite receiver.
- Insert a cassette with the safety tab in place.

1 ACCESS MAIN MENU SCREEN

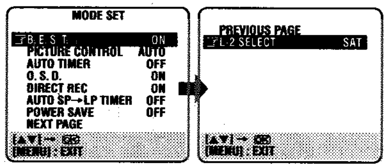
Press **MENU**.

2 ACCESS MODE SET SCREEN

Move the highlight bar (pointer) to "MODE SET" by pressing △▽, then press **OK** or ▷.

3 SELECT L-2 SELECT MODE

Move the highlight bar (pointer) to "L-2 SELECT", by pressing △▽, then press **OK** or ▷ to set to "SAT" or "L-2". Then press **MENU**.



```
         MODE SET

☞B.E.S.T.               ON
 PICTURE CONTROL      AUTO
 AUTO TIMER            OFF
 O.S.D.                 ON
 DIRECT REC             ON
 AUTO SP→LP TIMER      OFF
 POWER SAVE            OFF
 NEXT PAGE
[▲▼] → OK
[MENU] : EXIT
```

```
 PREVIOUS PAGE
☞L-2 SELECT            SAT





[▲▼] → OK
[MENU] : EXIT
```

4 SET TAPE SPEED

Press **SP/LP** (**////**) to set the tape speed.

5 ENGAGE AUTO SATELLITE PROG REC MODE

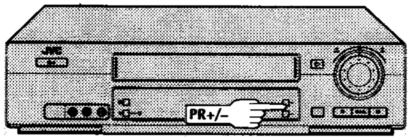
Press and hold **SAT◷** for about 2 seconds. The SAT◷ indicator lights up and the recorder turns off automatically.

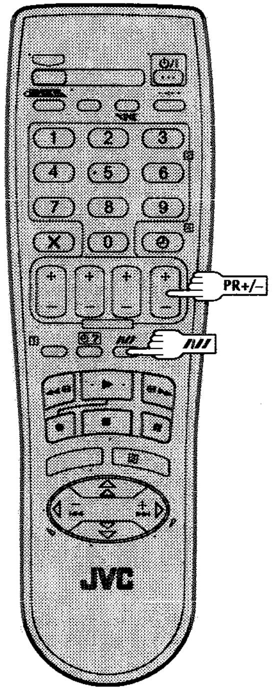
- To disengage the Auto Satellite Prog Rec mode, press **SAT◷**. The SAT◷ indicator goes off.
- If the recorder's power is off, it is not possible to engage the Auto Satellite Prog Rec mode.

NOTES:

- *Auto Satellite Prog recording is possible with the AV2 (L-2) IN/DECODER connector only.*
- *When the Auto Satellite Prog Rec mode is engaged or the recorder's power is turned off after Auto Satellite Prog recording is finished, the recorder will not enter the Timer mode even though "AUTO TIMER" is set to "ON".*
- *After Auto Satellite Prog recording, the number of recorded programmes will not be displayed on the front display panel for the Instant ReView function (☞ pg. 24).*
- *For timer programming of the satellite receiver, refer to the instruction manual of the satellite receiver.*
- *Auto Satellite Prog recording is not possible if your satellite receiver does not have a timer.*
- *The SAT ◷ indicator blinks while Auto Satellite Prog recording is in progress.*
- *Pressing the recorder's ⏻/I button while Auto Satellite Prog recording is in progress turns off the recorder's power and disengages the Auto Satellite Prog Rec mode.*
- *If there is more than one satellite programme you wish to record with Auto Satellite Prog Recording, it is not possible to set a different tape speed for each; the tape speed selected in step* **4** *will apply to all the programmes for Auto Satellite Prog recording.*
- *The B.E.S.T. system (☞ pg. 22) does not work while Auto Satellite Prog recording is in progress.*
- *Just Clock (☞ pg. 38) does not work when the Auto Satellite Prog Rec mode is engaged.*
- *Depending on the type of satellite receiver, the recorder may not record a short portion at the beginning of the programme or may record slightly longer than the actual length of the programme.*
- *If you engage the Auto Satellite Prog Rec mode when the satellite receiver's power is on, the recorder will not start Auto Satellite Prog recording even though the SAT ◷ indicator blinks. When the satellite receiver shuts off once and is turned back on again, the recorder starts recording.*
- *You can also record a programme from your cable system in the same way if the system has a timer and is connected to the recorder's AV2 (L-2) IN/DECODER connector.*

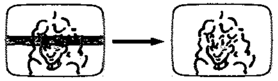
Playback Picture Adjustment





Manual Tracking

Your video recorder is equipped with automatic tracking control. For most tapes this will automatically adjust the tracking to suit the particular tape you are playing. In some circumstances it may be necessary to make manual tracking adjustments. This is usually only associated with old or worn tapes or recordings made on old or worn recorders. If the automatic tracking control fails to operate correctly you will see noise bars across the picture as shown on the left below. To correct this you can override the automatic control and adjust the tracking manually by pressing the **PR** buttons.



1 OVERRIDE AUTOMATIC TRACKING

Press **////** on the remote to engage manual tracking.

2 ADJUST TRACKING MANUALLY

Press **PR** + or – to adjust tracking.

3 RETURN TO AUTOMATIC TRACKING

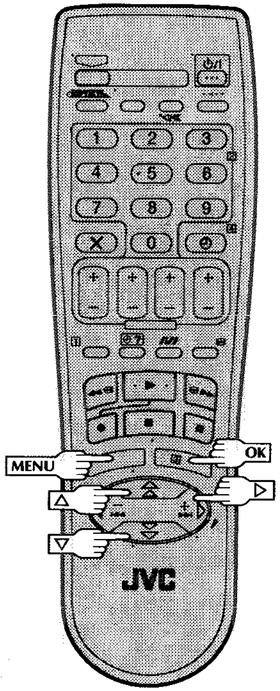
Press **////** on the remote to re-engage automatic tracking.

NOTE:

When a new tape is inserted, the recorder returns to the automatic tracking mode automatically.

Minimizing Picture Degradation While Editing

Turn on the TV and select the VIDEO channel (or AV mode).



Picture Control

This feature helps you to adjust the playback picture quality according to your preference. *The default setting is "AUTO."

1 ACCESS MAIN MENU SCREEN

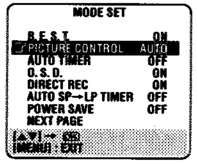
Press **MENU**.

2 ACCESS MODE SET SCREEN

Move the highlighted bar (pointer) to "MODE SET" by pressing △▽, then press **OK** or ▷.

3 SELECT PICTURE CONTROL SET MODE

Move the highlighted bar (pointer) to "PICTURE CONTROL" by pressing △▽, then press **OK** or ▷ to select the desired mode.



```
          MODE SET

 B.E.S.T.                ON
 PICTURE CONTROL       AUTO
 AUTO TIMER             OFF
 O.S.D.                  ON
 DIRECT REC              ON
 AUTO SP→LP TIMER       OFF
 POWER SAVE             OFF
 NEXT PAGE
[▲▼]→ OK
[MENU] : EXIT
```

AUTO: Provides optimised picture benefits of B.E.S.T. Picture System. Normally select "AUTO".

EDIT: Minimizes picture degradation during editing (recording and playback).

SOFT: Reduces image coarseness when viewing overplayed tapes containing a lot of noise.

SHARP: Clearer, sharper-edged picture when viewing images with lots of flat, same-coloured surfaces such as cartoons.

NOTES:

- *When you select "EDIT", "SOFT" or "SHARP", the selected mode will not change until you select again.*
- *When you select "EDIT" to dub tapes, be sure to select "AUTO" after you finish dubbing the tapes.*

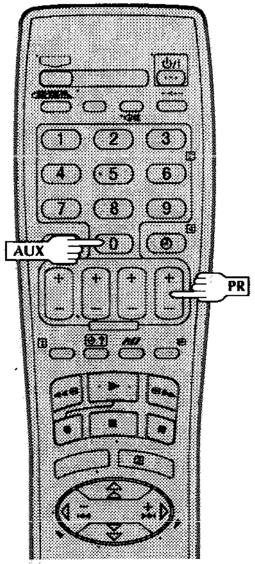
4 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:

- *When "B.E.S.T." is "OFF", "PICTURE CONTROL" switches automatically from "AUTO" to "NORM".*
- *Select "EDIT" when you are dubbing tapes. Refer to page 30 or 31.*

Edit From A Camcorder



You can use a camcorder as the source player and your video recorder as the recorder.

1 MAKE CONNECTIONS

Connect the camcorder's AUDIO/VIDEO OUT connectors to the recorder's front panel AUDIO/VIDEO input connectors.

- When using a monaural camcorder, connect its AUDIO OUT connector to the AUDIO L input connector on your recorder.

2 SET RECORDER'S INPUT MODE

Press **AUX** and/or **PR** so that "F-1" appears in place of a preset position number.

3 SET EDIT MODE

See "Picture Control" on page 29.

4 START CAMCORDER

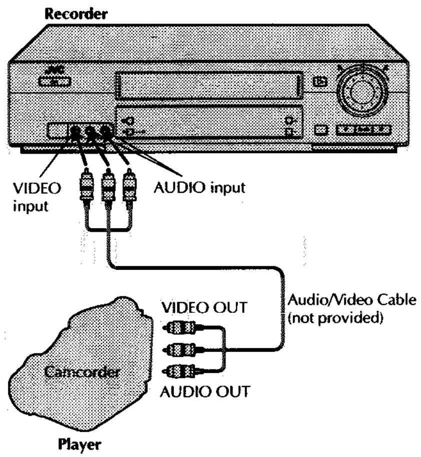
Engage its Play mode.

5 START RECORDER

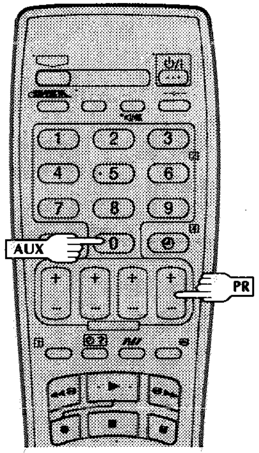
Engage its Record mode.

NOTES:

- *All necessary cables can be obtained from your dealer.*
- *You can also use another video recorder as the player instead of a camcorder.*
- *When you select "EDIT" to dub tapes in step 3, be sure to select "AUTO" (or "NORM" when "B.E.S.T." is set to "OFF") after you finish dubbing the tapes.*


Recorder
VIDEO input
AUDIO input
VIDEO OUT
AUDIO OUT
Audio/Video Cable (not provided)
Camcorder
Player

Edit To Or From Another Video Recorder



You can use your video recorder as the source player or as the recording deck.

1 MAKE CONNECTIONS

Connect the player's 21-pin SCART connector to the recorder's 21-pin SCART connector as illustrated below.

When Using Your Video Recorder As The Source Player . . .
. . . connect its AV1 (L-1) IN/OUT connector to the recording deck.

When Using Your Video Recorder As The Recording Deck . . .
. . . connect its AV2 (L-2) IN/DECODER or AV1 (L-1) IN/OUT connector to the source player.

2 SET RECORDING DECK'S INPUT MODE

Set to AUX. With this video recorder, press **AUX** and/or **PR** to select "L-1" for the AV1 (L-1) IN/OUT connector, or "L-2" for the AV2 (L-2) IN/DECODER connector, depending on the connector being used.

- When using the AV2 (L-2) IN/DECODER connector, set "L-2 SELECT" to the appropriate mode. (☞ pg. 32)

3 SET EDIT MODE

See "Picture Control" on page 29.

4 START SOURCE PLAYER

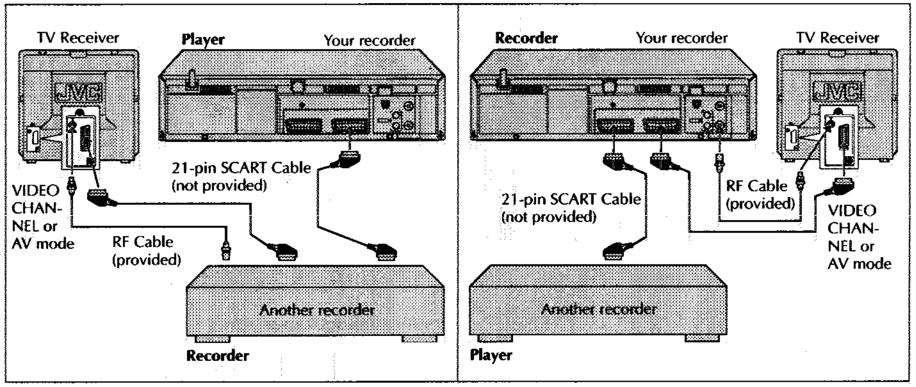
Engage its Play mode.

5 START RECORDING DECK

Engage its Record mode.

NOTES:

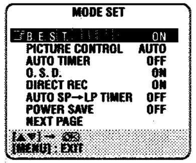
- *All necessary cables can be obtained from your dealer.*
- *When you select "EDIT" to dub tapes in step 3, be sure to select "AUTO" (or "NORM" when "B.E.S.T." is set to "OFF") after you finish dubbing the tapes.*
- *When you use this recorder as the player for editing, be sure to set "O.S.D." to "OFF" before starting (☞ pg. 33).*


TV Receiver
Player
Your recorder
VIDEO CHAN-NEL or AV mode
21-pin SCART Cable (not provided)
RF Cable (provided)
Another recorder
Recorder
Recorder
Your recorder
TV Receiver
21-pin SCART Cable (not provided)
RF Cable (provided)
VIDEO CHAN-NEL or AV mode
Another recorder
Player

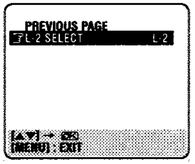
L-2 SELECT Setting

Set "L-2 SELECT" to the appropriate mode depending on the type of unit connected to the rear panel AV2 (L-2) IN/DECODER connector of this recorder.

1. Press **MENU** to access the Main Menu screen.
2. Press △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.
3. Press △▽ to move the highlight bar (pointer) to "L-2 SELECT".
4. Press **OK** or ▷ to select "L-2", "DECODER" or "SAT".
   - a–L-2 : To use this recorder as the recording deck with the player connected to the AV2 (L-2) IN/DECODER connector, or to use the satellite receiver connected to the AV2 (L-2) IN/DECODER connector.
   - b–DECODER : To use a decoder connected to the AV2 (L-2) IN/DECODER connector.
   - c–SAT : To view a satellite programme with the TV set while the recorder is turned off. (☞ pg. 26)
5. Press **MENU** to return to normal screen.


MODE SET
B.E.S.T. ON
PICTURE CONTROL AUTO
AUTO TIMER OFF
O.S.D. ON
DIRECT REC ON
AUTO SP→LP TIMER OFF
POWER SAVE OFF
NEXT PAGE

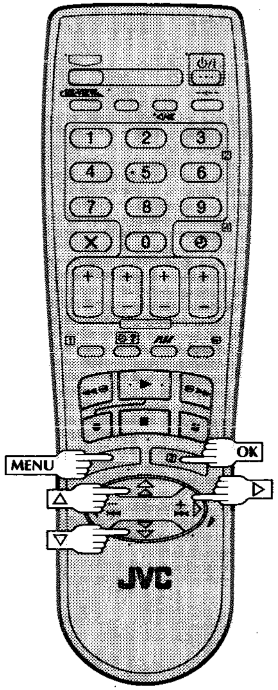
⬇


PREVIOUS PAGE
L-2 SELECT L-2

- If you have a satellite receiver or a decoder connected to the AV2 (L-2) IN/DECODER connector, be sure to set "L-2 SELECT" back to appropriate mode after editing.
- If you're not connecting a satellite receiver or a decoder to the AV2 (L-2) IN/DECODER connector, leave "L-2 SELECT" set to "L-2".
- The default setting is "L-2"; if the recorder's memory backup has expired due to a power cut or because the AC was removed from the recorder, "L-2" will be automatically selected when the power is restored to the recorder. If you are using a satellite receiver or a decoder, be sure to set "L-2 SELECT" back to appropriate mode.
- When "L-2 SELECT" is set to "SAT", "SAT" appears on screen or display panel instead of "L-2" or "L2".

Other Functions

Turn on the TV and select the VIDEO channel (or AV mode).



On-Screen Display

You can choose whether or not to have various operational indicators appear on screen, by setting this function ON or OFF.

1 ACCESS MAIN MENU SCREEN

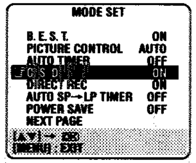
Press **MENU**.

2 ACCESS MODE SET SCREEN

Move the highlight bar (pointer) to "MODE SET" by pressing △▽, then press **OK** or ▷.

3 ENABLE/DISABLE ON-SCREEN DISPLAY

The default setting is "ON", so if you want on-screen displays, leave the setting as it is and go to step **4**. If you don't want the displays to appear, press △▽ to move the highlight bar (pointer) to "O.S.D." and press **OK** or ▷ to set "O.S.D." to "OFF".


MODE SET
B.E.S.T. ON
PICTURE CONTROL AUTO
AUTO TIMER OFF
O.S.D. ON
DIRECT REC ON
AUTO SP→LP TIMER OFF
POWER SAVE OFF
NEXT PAGE

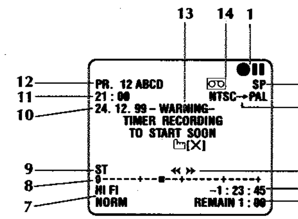
4 RETURN TO NORMAL

Press **MENU**.

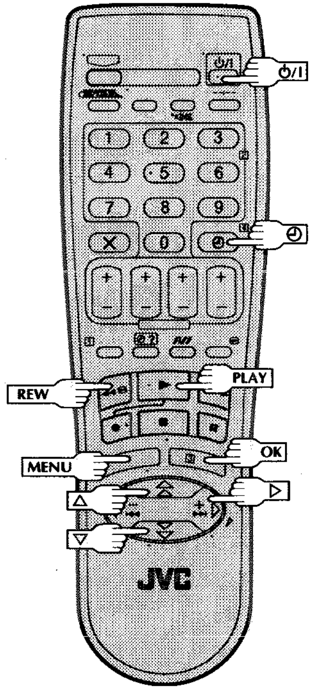
NOTES:

- *When you use this recorder as the player for editing, be sure to set "O.S.D." to "OFF" before starting.*
- *During playback, the operation mode indicators may sometimes be disturbed depending on the type of tape being used.*

The superimposed indication on the TV screen tells you what the recorder is doing.



1– Operation mode indicators
2– Tape speed SP/LP/EP (EP is for NTSC playback only)
3– NTSC playback display (☞ pg. 36)
4– Tape direction
5– Counter display
6– Tape remaining time indicator (☞ pg. 15)
7– Audio mode display (☞ pg. 25)
8– Tape position indicator (☞ pg. 12)
9– Type of Broadcast (☞ pg. 25)
10– Current day/month/year
11– Clock display
12– Channel position number and station name/Aux. indicator (L-1, L-2, SAT* or F-1)
  ** When "L-2 SELECT" is set to "SAT" (☞ pg. 32), "SAT" appears instead of "L-2".*
13– Timer warning display (☞ pg. 17, 19)
14– Cassette loaded mark



Power Save Mode

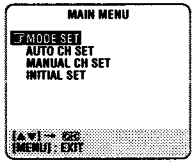
You can reduce the power consumption while the recorder is turned off.

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.

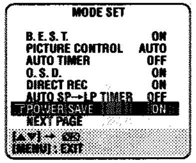


```
       MAIN MENU
☞MODE SET
  AUTO CH SET
  MANUAL CH SET
  INITIAL SET

[▲▼] → OK
[MENU] : EXIT
```

3 SELECT POWER SAVE MODE

Press △▽ to move the highlight bar (pointer) to "POWER SAVE", then press **OK** or ▷ to set to "ON".



```
       MODE SET
  B.E.S.T.             ON
  PICTURE CONTROL    AUTO
  AUTO TIMER          OFF
  O.S.D.               ON
  DIRECT REC           ON
  AUTO SP→LP TIMER    OFF
☞POWER SAVE            ON
  NEXT PAGE
[▲▼] → OK
[MENU] : EXIT
```

4 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:
- *During Power Save, the display panel will be turned off.*
- *The Just Clock function (☞ pg. 38) does not work while the Power Save mode is engaged.*
- *While the recorder is in the Power Save mode, the picture may be distorted momentarily when you turn on/off the recorder.*
- *Power Save does not work when ...*
  - *... the recorder is in the Timer mode.*
  - *... the recorder's power is turned off after timer-recording (or Instant Timer Recording).*
  - *... the Auto Satellite Prog Recording mode is engaged (☞ pg. 26).*
  - *... "L-2 SELECT" is set to "DECODER" or "SAT" (☞ pg. 32).*

Auto Timer

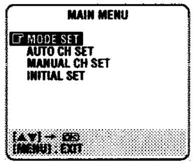
When the Auto Timer is set to ON the timer is automatically engaged when the recorder power is turned off and automatically disengaged when the recorder is powered back on.

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.

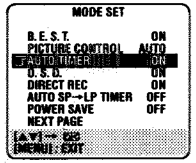


```
       MAIN MENU
☞MODE SET
  AUTO CH SET
  MANUAL CH SET
  INITIAL SET

[▲▼] → OK
[MENU] : EXIT
```

3 SELECT MODE

Press △▽ to move the highlight bar (pointer) to "AUTO TIMER", then press **OK** or ▷ to select either "ON" or "OFF".



```
       MODE SET
  B.E.S.T.             ON
  PICTURE CONTROL    AUTO
☞AUTO TIMER            ON
  O.S.D.               ON
  DIRECT REC           ON
  AUTO SP→LP TIMER    OFF
  POWER SAVE          OFF
  NEXT PAGE
[▲▼] → OK
[MENU] : EXIT
```

4 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTE:

*For safety, when Auto timer is set to "OFF", all other recorder functions are disabled while the Timer mode is engaged. To disengage the timer, press ⊕ (**TIMER**).*

Next Function Memory

The Next Function Memory "tells" the recorder what to do after rewinding. Before continuing, make sure the recorder is in the Stop mode.

a– For Automatic Start Of Playback After Tape Rewind . . .
. . . press **REW**, then press **PLAY** within 2 seconds.
b– For Automatic Power Off After Tape Rewind . . .
. . . press **REW**, then press ⏻/I within 2 seconds.
c– For Automatic Timer Standby After Tape Rewind . . .
. . . press **REW**, then press ⊕ (**TIMER**) within 2 seconds.

Auto SP→LP Timer

If, when timer-recording in SP mode, there is not enough tape to record the entire programme, the recorder automatically switches to LP mode to allow complete recording.

For Example . . .

Recording a programme of 210 minutes in length onto a 180-minute tape

Approximately 150 minutes	Approximately 60 minutes
SP mode	LP mode

Total 210 minutes

Make sure you set "AUTO SP→LP TIMER" to "ON" at the Mode Set screen before the timer-recording starts.

1 ACCESS MAIN MENU SCREEN

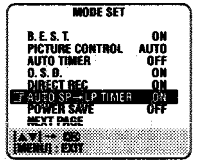
Press **MENU**.

2 ACCESS MODE SET SCREEN

Press △▽ to move the highlight bar (pointer) to "MODE SET", then press **OK** or ▷.

3 SELECT MODE

Press △▽ to move the highlight bar (pointer) to "AUTO SP→LP TIMER", then press **OK** or ▷ to select "ON".

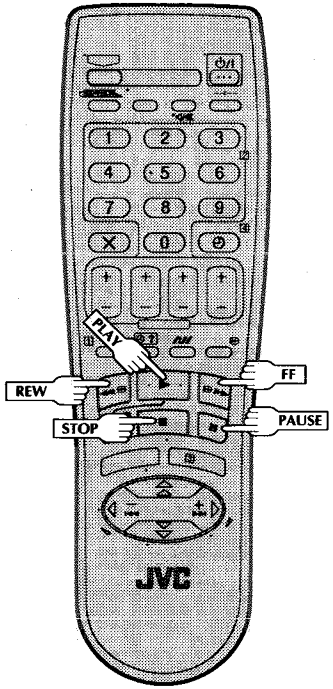


```
       MODE SET
  B.E.S.T.             ON
  PICTURE CONTROL    AUTO
  AUTO TIMER          OFF
  O.S.D.               ON
  DIRECT REC           ON
☞AUTO SP→LP TIMER      ON
  POWER SAVE          OFF
  NEXT PAGE
[▲▼] → OK
[MENU] : EXIT
```

4 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:
- *The Auto SP→LP Timer feature is not available during ITR (Instant Timer Recording), and the feature will not work properly with any tapes longer than E-180 or with some tapes of shorter lengths.*
- *If you have programmed the recorder to timer-record 2 or more programmes, the second programme and those thereafter may not fit on the tape if you set "AUTO SP→LP TIMER" to "ON". In this case, make sure the mode is not engaged, then set the tape speed manually during timer programming.*
- *In order to ensure that the recording fits on the tape, this feature may leave a short non-recorded section at the end of the tape.*
- *There may be some picture noise and sound disturbance at the point on the tape where the recorder switches from SP to LP mode.*
- *If you perform timer recording with both PDC and the Auto SP→LP Timer activated, and the programme goes beyond its originally scheduled length, there may be times when the programme cannot be recorded in its entirety.*



Repeat Playback

Your video recorder can automatically play back the whole tape 100 times repeatedly.

1 START PLAYBACK

Press **PLAY**.

2 ACTIVATE REPEAT PLAYBACK

Press **PLAY** and hold for over 5 seconds, then release.

- The Play indicator (▷) on the display panel blinks slowly.
- The tape plays 100 times automatically, and then stops.

3 STOP PLAYBACK

Press **STOP** at any time to stop playback.

NOTE:

*Pressing **PLAY, REW, FF** or **PAUSE** also stops Repeat Playback.*

NTSC Playback

Your video recorder is equipped with NTSC circuitry that can play back NTSC tapes.

1 LOAD A CASSETTE

Insert a cassette recorded in NTSC.

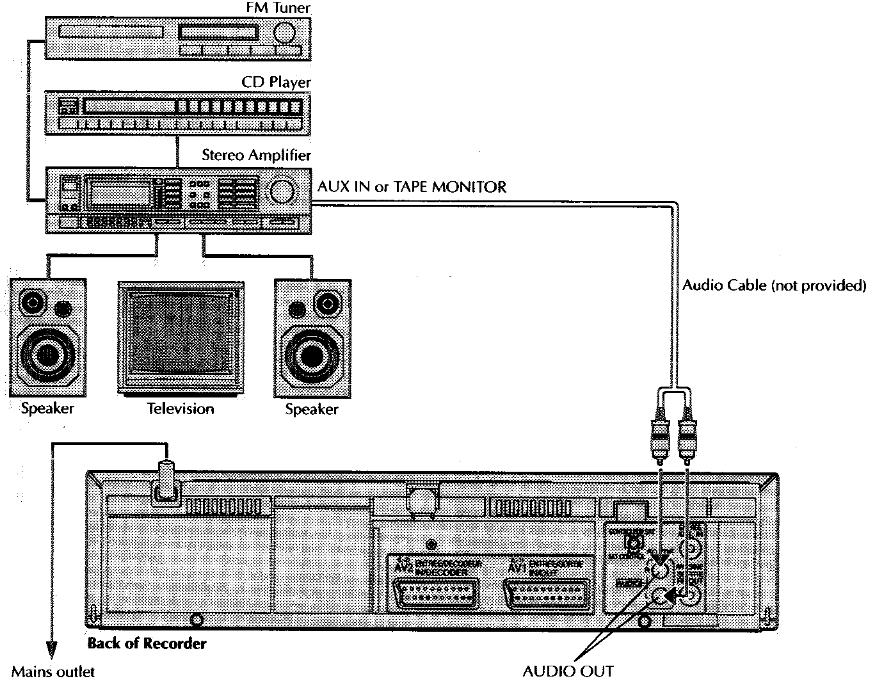
2 START PLAYBACK

Press **PLAY**.

- "NTSC→PAL" appears on the screen for about 5 seconds.
- Some TVs shrink the picture vertically and place black bars at the top and bottom of the screen. This is not a malfunction on the part of either the video recorder or the TV.
- The picture may roll up and down. This can be corrected using the V-HOLD control found on some TVs. (This cannot be corrected if the TV does not have a V-HOLD control.)
- The counter and tape remaining time readings will be incorrect.
- During search, still, or frame-by-frame playback, the picture will be distorted, and there may be a loss of colour.
- Depending on the type of TV, the top and bottom portions of superimposed displays may be cut off during NTSC playback.

Connection To A Stereo System

These instructions enable you to connect your video recorder to your Hi-Fi stereo system (if you have one) and listen to the soundtrack through the stereo.



1 MAKE CONNECTIONS

Connect the AUDIO OUT L and R connectors on your video recorder to the AUX IN or TAPE MONITOR terminals on your stereo system's receiver or amplifier.

NOTES:

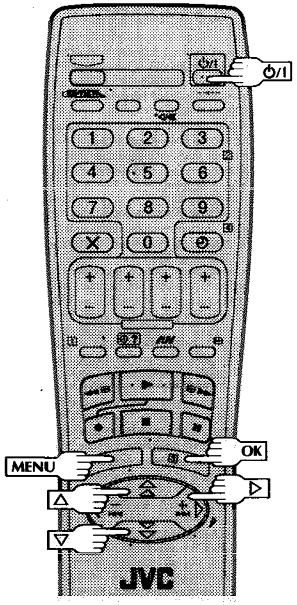
- *When connecting your recorder's audio output connectors to a stereo amplifier, make sure you connect L and R correctly.*
- *If you can receive NICAM TV broadcasts in your area, this recorder can record them independently of the TV set and play them back through the connected stereo system.*
- *When listening to sound through the connected stereo system, turn the TV's volume down completely.*

CAUTIONS:

- This recorder has a dynamic range of more than 80 dB with regards to its Hi-Fi audio capability. It is recommended that you check the maximum level if you are going to listen to the Hi-Fi audio signals through a stereo amplifier. A sudden surge in the input level to the speakers may damage them.
- Some speakers and televisions are specially shielded to prevent television interference. If both are of the non-shielded type, do not place the speakers adjacent to the TV set as this can adversely affect the video playback picture.

Clock Set

Turn on the TV and select the VIDEO channel (or AV mode).



Just Clock
The Just Clock function provides accurate time keeping through automatic adjustments at regular intervals, by reading data from a PDC signal.
The Just Clock option can be set "ON" or "OFF" at the Clock Set screen (the default setting is "ON"). Press OK until the Just Clock setting begins blinking, then press △▽ to change the setting.

IMPORTANT: If you turn the Just Clock function off, the accuracy of your recorder's built-in clock may be impaired, which could adversely affect timer recording.

NOTES:

- *Just Clock (when set to "ON") adjusts the recorder's built-in clock every hour, except for 23:00, 0:00, 1:00 and 2:00.*
- *Just Clock is not effective when . . .*
  - *the recorder's power is on.*
  - *the recorder is in the Timer mode.*
  - *a difference of more than 3 minutes exists between the built-in clock's time and the actual time.*
  - *the recorder is in the Auto Satellite Prog Rec mode (☞ pg. 26)*
  - *"L-2 SELECT" is set to "SAT". (☞ pg. 32)*
- *If Just Clock is set to "ON", the recorder's clock is automatically adjusted at the start/end of Summer Time.*
- *Just Clock may not function properly in poor reception conditions.*

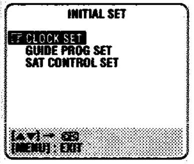
IMPORTANT
If you performed Auto Set Up (☞ pg. 6), Preset Download (☞ pg. 7) or Auto Channel Set (☞ pg. 42), without ever having set the clock previously, the recorder's built-in clock is also set automatically.
Perform the following steps only if —
— Auto Clock Set has not been performed correctly by Auto Set Up, Preset Download or Auto Channel Set.
or
— the recorder's memory backup has expired.
or
— you want to change Just Clock setting (☞ "Just Clock" in the left column).

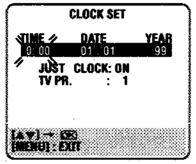
1 TURN THE RECORDER ON
Press ⏻/I.

2 ACCESS MAIN MENU SCREEN
Press **MENU**.

3 ACCESS INITIAL SET SCREEN
Move the highlight bar (pointer) to "INITIAL SET" by pressing △▽, then press **OK** or ▷.

4 ACCESS CLOCK SET SCREEN
Move the highlight bar (pointer) to "CLOCK SET" by pressing △▽, then press **OK** or ▷. The Clock Set screen appears.





5 SET DATE AND TIME
Press △▽ to set the time, then press **OK** or ▷. The "date" display begins blinking. Repeat the same procedure to set the date and year.

- When you set the time, press and hold △▽ to change the time by 30 minutes.
- When you set the date, press and hold △▽ to change the date by 15 days.

6 SET JUST CLOCK
The default setting is "ON". Set as desired by pressing △▽, then press **OK** or ▷.

- For the Just clock function, ☞ "Just Clock" on the left.
- If you set to "OFF", you can disregard the next step as you won't be able to receive regular clock adjustments.

7 SET CLOCK DATA SOURCE PRESET
The recorder is preset to receive clock setting and adjustment data from preset position 1. Press △▽ to set the preset position to the number representing the station transmitting clock setting data (BBC1, BBC2, etc.), then press **OK** or ▷.

8 START CLOCK OPERATION
Press **MENU**.

VIDEO Plus+ Setup

IMPORTANT
Normally, Auto Set Up (☞ pg. 6), Preset Download (☞ pg. 7) or Auto Channel Set (☞ pg. 42) sets the Guide Program Numbers automatically. You need to set the Guide Program Numbers manually only in the following cases.
- *When timer-programming with VIDEO Plus+, the preset position, where the station you wish to record is received on your recorder, is not selected or when you add a channel after Auto Set Up or Auto Channel Set has taken place.*

— Set the Guide Program Number for that station manually.
- *When you wish to timer-record a satellite programme with VIDEO Plus+.*

— Set the Guide Program Numbers for all satellite broadcasts received on your satellite receiver.

Turn on the TV and select the VIDEO channel (or AV mode).

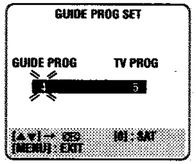
Guide Program Number Set

1 ACCESS MAIN MENU SCREEN
Press **MENU**.

2 ACCESS INITIAL SET SCREEN
Press △▽ to move the highlight bar (pointer) to "INITIAL SET", then press **OK** or ▷.

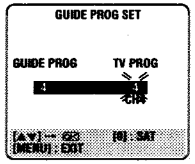
3 ACCESS GUIDE PROG SET SCREEN
Press △▽ to move the highlight bar (pointer) to "GUIDE PROG SET", then press **OK** or ▷.

4 ENTER GUIDE PROG NUMBER
Press △▽ to enter the Guide Program number for the desired station as shown in the TV listings. Then press **OK** or ▷.



(Ex.) When inputting the Guide Program number 4 for CH4.

5 ENTER RECEIVING PRESET POSITION NUMBER
Press the **NUMBER** key "0" to select "TV PROG" or "SAT". Then press △▽ to input the number of the preset position on which the Guide Program number's broadcast is received by the recorder or the satellite receiver. Then press **OK** or ▷.



(Ex.) If CH4 is received on preset position 4.

- To timer-record a satellite programme with VIDEO Plus+, you need to install the provided Satellite Controller and perform the procedure described in "Satellite Receiver Control Setting" (☞ pg. 10).
- Repeat steps **4** and **5** as necessary.

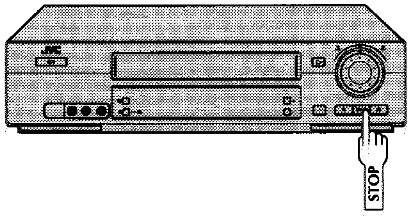
6 RETURN TO NORMAL SCREEN
Press **MENU**.

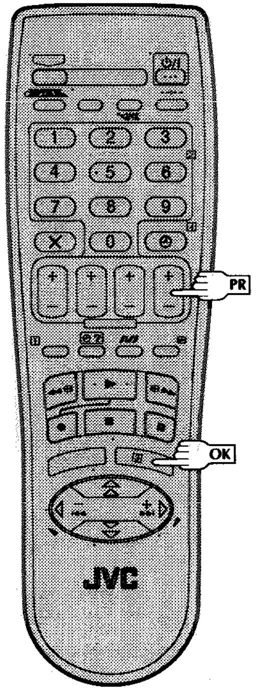
Guide Program Number

"Guide Program (GUIDE PROG) number" refers to the assigned TV station numbers, according to broadcast area, for VIDEO Plus+ timer recording. The Guide Program numbers can be found in most TV listings.

Video Channel Set

Video Channel (RF Output Channel) is the channel on which your TV receives picture and sound signals from the video recorder through the RF cable.





IMPORTANT
Perform the following steps only if —
- Video Channel Set has not been done correctly by the Auto Set Up function (☞ pg. 6).
- interference appears in the TV picture after you have moved to a different area or a new station has started broadcasting in your area.
- you change the connection between your recorder and TV from RF connection to AV connection, or vice versa.

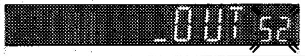
- ***If you have connected the video recorder to your TV via both the provided RF cable and a 21-pin SCART cable (AV connection), you do not need the video channel so you have to set the video channel to off. — Go to "With AV Connection" below.***
- ***If you have connected the video recorder to your TV via the provided RF cable only (RF connection), you have to set the correct video channel — Go to "With RF Connection" on page 41.***

With AV Connection

Before performing the following procedure, make sure that:
- the mains power cord is plugged into the mains outlet.
- the video recorder is turned off and there is no cassette inserted in the recorder.
- batteries have been installed in the remote control.

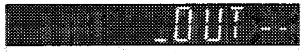
1 ACCESS VIDEO CHANNEL SET MODE

Press and hold down **STOP** on the recorder until the display panel shows the following.



2 SET VIDEO CHANNEL

Press **PR** – until the display panel shows "_OUT– –".



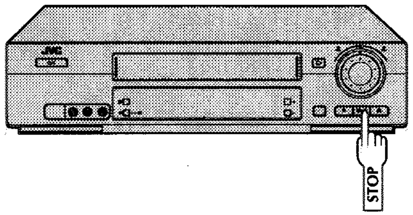
- Now the video channel is set to off.

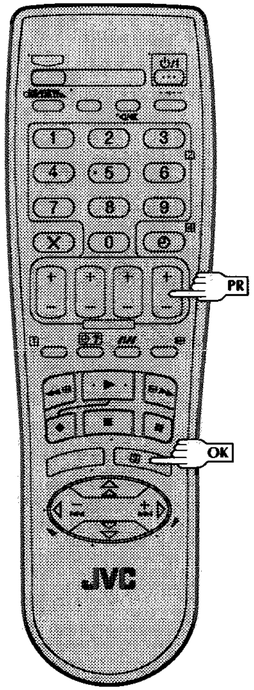
3 EXIT VIDEO CHANNEL SET MODE

Press **OK**.

To view picture signals from the video recorder, set your TV to its AV mode. Refer to the instructions supplied with your TV set for how to do this.

With RF Connection

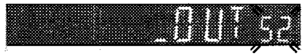




Before performing the following procedure, make sure that:
- the mains power cord is plugged into the mains outlet.
- the video recorder is turned off and there is no cassette inserted in the recorder.
- the connected TV is turned on.
- batteries have been installed in the remote control.

1 ACCESS VIDEO CHANNEL SET MODE

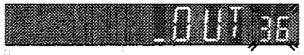
Press and hold down **STOP** on the recorder until the display panel shows the following.



2 SET VIDEO CHANNEL

Press **PR+** or – to set the video recorder to a vacant channel between 22 and 69 which is not occupied by any local station in your area. Refer to list on page 48 for details of broadcast stations in your area.

(Ex.) If channel 36 is available in your area



Then set your TV to UHF channel 36. (Refer to the instructions supplied with your TV set for how to do this.)
- If the two vertical white bars appear clearly on the screen as shown in the illustration at bottom left, go to step **3**.
- If the two vertical white bars do not appear clearly, re-set the video recorder to another vacant channel and try again.

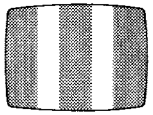
IMPORTANT
- *If you set the video recorder to a channel which is occupied by a local station or has neighbouring channels that are occupied by local stations, the picture reception quality will be affected and some interference noise will appear on the TV screen. Be sure to select a vacant channel which has no broadcast on neighbouring channels.*
- *If you cannot obtain the two vertical white bars clearly with any channel between 22 and 69, consult your JVC dealer.*

3 EXIT VIDEO CHANNEL SET MODE

Press **OK**.

To view picture signals from the video recorder, set your TV to the Video Channel.

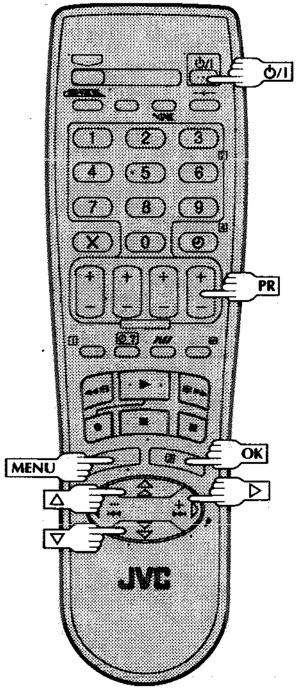
TEST SIGNAL



The channel on which the screen on the left appears clearly in step **2** is your Video Channel.

Tuner Set

Turn on the TV and select the VIDEO channel (or AV mode).



IMPORTANT
Perform the following steps only if —
— Auto Channel Set has not been set correctly by Auto Set Up function (☞ pg. 6) or Preset Download (☞ pg. 7).
— you have moved to a different area or if a new station starts broadcasting in your area.

Your recorder needs to memorise all necessary stations in preset positions in order to record TV programmes. Auto Channel Set automatically assigns all receivable stations in your area to call them up by using the **PR** buttons without going through any vacant channel.

Auto Channel Set

1 TURN ON THE RECORDER

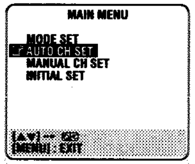
Press ⓒ/I.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

3 PERFORM AUTO CHANNEL SET

Move the highlight bar (pointer) to "AUTO CH SET" by pressing △▽, then press **OK** or ▷.

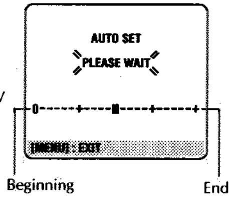


MAIN MENU

MODE SET
☞ AUTO CH SET
MANUAL CH SET
INITIAL SET

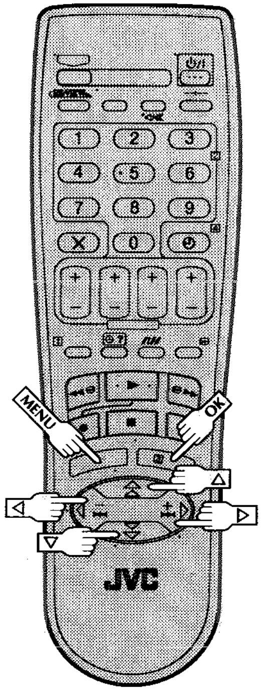
[▲▼] → OK
[MENU] : EXIT

- When you have connected the video recorder to a TV offering T-V Link via the AV connection (☞ pg. 5) and the TV is turned on, the recorder automatically performs the Preset Download (☞ pg. 7) even if you select "AUTO CH SET".
- The Auto Set screen appears, and remains on screen while the recorder searches for receivable stations. As Auto Channel Set progresses, the "■" mark on the screen moves from left to right. Wait until the screen as shown in step **4** appears.
- Auto Channel Set usually takes about 4 – 12 minutes; the duration varies by area.



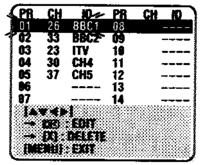
AUTO SET
PLEASE WAIT

[MENU] : EXIT



4 VIEW CONFIRMATION SCREEN

After "SCAN COMPLETED" is displayed on the screen for about 5 seconds, a Confirmation screen looking like the one on the right appears. The stations your recorder located appear on a Confirmation screen — preset positions (PR), channels (CH) and station names (ID – ☞ pg. 47). The blueback screen and the programme currently being broadcast by the station which is blinking appear alternately for 8 seconds each.
To view the next page, use the △▽ ◁▷ button on the remote control.



PR	CH	ID	PR	CH	ID
01	26	BBC1	08		----
02	33	BBC2	09		----
03	23	ITV	10		----
04	30	CH4	11		----
05	37	CH5	12		----
06		----	13		----
07		----	14		----

[▲▼◀▶]
→ OK : EDIT
→ [X] : DELETE
[MENU] : EXIT

- The Guide Program numbers will also be set automatically during Auto channel Set.

5 RETURN TO NORMAL SCREEN

Press **MENU**.

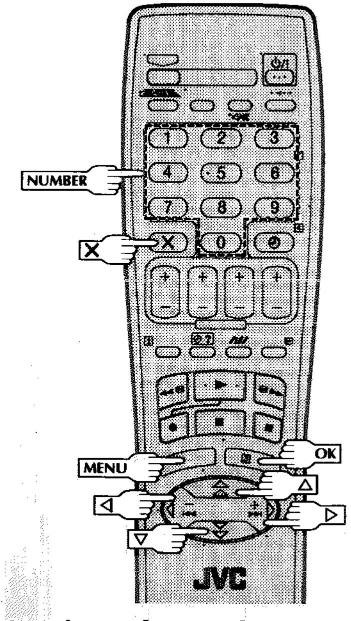
- Using the Confirmation screen, you can skip or add preset positions, enter station names and perform other operations. Refer to pages 44 – 48 for the procedures.
- Depending on reception conditions, the stations may, on occasion, not be stored in order, and the station names may not be stored correctly.

IMPORTANT

- In certain reception conditions, station names may not be stored correctly, and auto Guide Program Number Set may not work properly. If the Guide Program numbers are not set properly, when you timer-record a TV programme using VIDEO Plus+, the recorder will record a TV programme of a different station. When programming the timer using VIDEO Plus+, be sure to check that the preset position corresponding to the broadcasting station you wish to record has been selected (☞ pg. 16, "VIDEO Plus+ Timer Programming").
- Your video recorder memorizes all detected stations even if reception of some of them is poor. In these cases picture quality may be poor. To delete those stations which have an unacceptable picture ☞ "Delete A Channel" on page 45.

NOTES:

- *Fine tuning is performed automatically during Auto Channel Set. If you wish to perform it manually, refer to page 45.*
- *If, for any reason, you perform Auto Channel Set when the aerial cable is not connected properly, "SCAN COMPLETED -NO SIGNAL-" appears on the screen in step **4**. When this happens, make sure of the aerial connection and press **OK**; Auto Channel Set will take place again.*



Storing Channels Manually

To store channels that were not stored during Auto Set Up (☞ pg. 6), Preset Download (☞ pg. 7) or Auto Channel Set (☞ pg. 42).

1 ACCESS MAIN MENU

Press **MENU**.

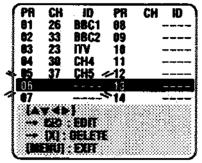
2 ACCESS CONFIRMATION SCREEN

Press △▽ to move the highlight bar (pointer) to "MANUAL CH SET", then press **OK** or ▷. The Confirmation screen appears.

3 SELECT POSITION

Press △▽ ◁▷ until an open position in which you want to store a channel begins blinking, then press **OK**. The Manual Channel Set screen appears.

(Ex.) To store in position 6.

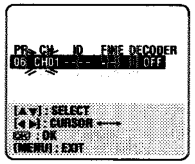


```
PR  CH  ID    PR  CH  ID
01  26  BBC1  08      ----
02  33  BBC2  09      ----
03  23  ITV   10      ----
04  30  CH4   11      ----
05  37  CH5   12      ----
06      ----  13      ----
07      ----  14      ----
[▲▼◀▶]
→ OK : EDIT
→ [X] : DELETE
[MENU] : EXIT
```

The blueback screen and the programme currently being broadcast by the selected channel appear alternately for 8 seconds each.

4 SELECT BAND

Press △▽ to change the band between CH (regular) and CC (cable), then press ▷.

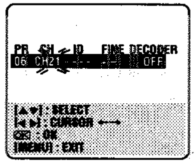


```
PR  CH    ID    FINE DECODER
06  CH01  ----  --      OFF
[▲▼] : SELECT
[◀▶] : CURSOR ←→
OK : OK
[MENU] : EXIT
```

The blueback screen and the programme currently being broadcast by the selected channel appear alternately for 8 seconds each.

5 INPUT CHANNEL

Press the **NUMBER** keys to input the channel number you want to store.



```
PR  CH    ID    FINE DECODER
06  CH21  ----  --      OFF
[▲▼] : SELECT
[◀▶] : CURSOR ←→
OK : OK
[MENU] : EXIT
```

The blueback screen and the programme currently being broadcast by the selected channel appear alternately for 8 seconds each.

- To input the registered station name (ID – ☞ pg. 47), press ▷ until "– – – –" (ID setting) begins blinking, then press △▽.
- For fine tuning adjustment, press ▷ until "+/–" begins blinking, then press △▽. While tuning, "+" or "–" appears.
- When "L-2 SELECT" is set to "L-2" or "SAT", the "DECODER" setting cannot be changed (☞ pg. 32).

6 ENTER NEW CHANNEL INFORMATION

Press **OK** and the Confirmation screen appears.

- Repeat steps **3** through **6** as necessary.

7 CLOSE CONFIRMATION SCREEN

Press **MENU**.

- To change positions, see "Change Station Preset Position" (☞ pg. 45).
- If you wish to set station names other than the ones registered in your recorder, ☞ "Set Stations (B)" on page 46.

ATTENTION

Guide Program numbers are not set when channels are stored manually. If an attempt is made at timer programming with VIDEO Plus+ in this state, the "GUIDE PROG SET" screen appears; set the Guide Program numbers on this screen. ☞ "ATTENTION – Regarding Guide Program Number Set" on page 17.
Or perform "Guide Program Number Set" (☞ pg. 39).

Delete A Channel

Perform steps **1** and **2** of "Storing Channels Manually" on page 44 to access the Confirmation screen before continuing.

1 SELECT ITEM

Press △▽ ◁▷ until the item you want to delete begins blinking.

2 DELETE CHANNEL

Press X.

- The item directly beneath the cancelled one moves up one line.
- Repeat steps **1** and **2** as necessary.

3 CLOSE CONFIRMATION SCREEN

Press **MENU**.

When Receiving A Scrambled Broadcast

1 SELECT DECODER MODE

Set "L-2 SELECT" to "DECODER" (☞ pg. 32).

2 ACCESS CONFIRMATION SCREEN

Perform steps **1** and **2** of "Storing Channel Manually" on page 44.

3 SELECT POSITION

Press △▽ ◁▷ to select the channel position broadcasting scrambled programmes, then press **OK** twice.

4 CHANGE DECODER SETTING

Press ▷ until "OFF" (decoder setting) begins blinking, and set it to "ON" by pressing △▽.

5 RETURN TO CONFIRMATION SCREEN

Press **OK**.

- Repeat steps **3** through **5** as necessary.

6 CLOSE CONFIRMATION SCREEN

Press **MENU**.

NOTE:

Scrambled programmes are not currently broadcast in the U.K.

Change Station Preset Position

Perform steps **1** and **2** of "Storing Channels Manually" on page 44 to access the Confirmation screen before continuing.

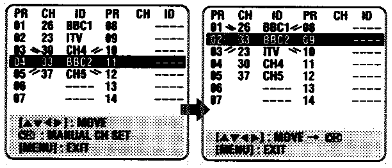
1 SELECT ITEM

Press △▽ ◁▷ until the item you want to move begins blinking. Then press **OK** and the station name (ID) and its channel (CH) number begin blinking.

2 SELECT NEW POSITION

Press △▽ ◁▷ to move the station to the new preset position, then press **OK**.

Example: If you moved the station in position 4 to position 2, the stations originally in positions 2 and 3 each move down one space.



```
PR  CH  ID    PR  CH  ID
01  26  BBC1  08      ----
02  23  ITV   09      ----
03  30  CH4   10      ----
04  33  BBC2  11      ----
05  37  CH5   12      ----
06      ----  13      ----
07      ----  14      ----
[▲▼◀▶] : MOVE
OK : MANUAL CH SET
[MENU] : EXIT
```

```
PR  CH  ID    PR  CH  ID
01  26  BBC1  08      ----
02  33  BBC2  09      ----
03  23  ITV   10      ----
04  30  CH4   11      ----
05  37  CH5   12      ----
06      ----  13      ----
07      ----  14      ----
[▲▼◀▶] : MOVE → OK
[MENU] : EXIT
```

- Repeat steps **1** and **2** as necessary.

3 CLOSE CONFIRMATION SCREEN

Press **MENU**.

Fine-Tuning Channels Already Stored

Perform steps **1** and **2** of "Storing Channels Manually" on page 44 to access the Confirmation screen before continuing.

1 SELECT CHANNEL TO FINE-TUNE

Press △▽ ◁▷ until the channel you want to tune begins blinking.

2 ACCESS MANUAL CHANNEL SET SCREEN

Press **OK** twice. The Manual Channel Set screen appears.

3 PERFORM TUNING

Press ▷ until "+/–" begins blinking, then press △▽ until the picture is clearest. Then press **OK**.

- The Confirmation screen appears.
- Repeat steps **1** through **3** as necessary.

4 CLOSE CONFIRMATION SCREEN

Press **MENU**.

Set Stations (A)

Set station names that are registered in your recorder.

Perform steps **1** and **2** of "Storing Channels Manually" on page **44** to access the Confirmation screen before continuing.

1 SELECT ITEM

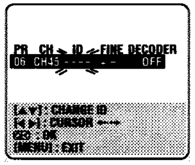
Press △▽ ◁▷ until the item you want begins blinking.

2 ACCESS MANUAL CHANNEL SET SCREEN

Press **OK** twice.

3 SELECT NEW STATION

Press ▷ until the station name (ID) begins blinking, then press △▽ until the new station's name (ID) you want to store begins blinking.
Registered station names (☞ pg. 47) appear as you press △▽.


PR CH ID FINE DECODER
06 CH45 ---- -- OFF

4 SWITCH STATIONS

Press **OK**.

- The Confirmation screen appears.
- Repeat steps **1** through **4** as necessary.

5 CLOSE CONFIRMATION SCREEN

Press **MENU**.

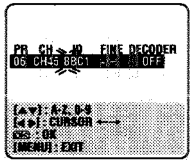
Set Stations (B)

Set station names other than the ones registered in your recorder.

Perform steps **1** and **2** of "Storing Channels Manually" on page **44** to access the Confirmation screen and then perform steps **1** and **2** of "Set Stations (A)" on the left before continuing.

1 SELECT STATION NAME CHARACTER

Press ▷ until the first letter of the station name begins blinking.


PR CH ID FINE DECODER
06 CH45 BBC1 -/- OFF

2 ENTER NEW CHARACTER

Press △▽ to cycle through the characters (A–Z, 0–9, –, ∗, +, ⎵ (space)) and stop when the desired character is indicated, then press ▷ to enter. Enter the remaining characters the same way (maximum of 4).
After entering all characters, press **OK**.

- The Confirmation screen appears.
- If you make a mistake, press ◁ until the incorrect character begins blinking. Then enter the correct character by pressing △▽.

3 CLOSE CONFIRMATION SCREEN

Press **MENU**.

NOTE:

The characters available for the station name (ID) are A–Z, 0–9, –, ∗, +, ⎵ (space) (maximum of 4).

TV Station And ID List

STATION NAME	ID*
Anglia TV	ANGL
ARD	ARD
ARTE	ARTE
BBC Group	BBC
BBC1	BBC1
BBC2	BBC2
Berlin 1	BLN1
Berlin 2	BLN2
Border TV	BORD
Bayern1	BR1
Bayern3	BR3
BRT1	BRT1
BRT2	BRT2
Children Ch	CHLD
Canal +	CH+
CNN	CNN
Channel TV	CHNL
Central TV	CNTR
Channel 4	CH 4
Channel 5	CH 5
DRS	DRS
DR TV	DRTV
DSF	DSF
Euronews	EURN
Euronews	EURO
Eurosports	EURS
France1	FR1
France2	FR2
France3	FR3
Granada TV	GRNA
Grampian TV	GRMP
Hessen1	HR1
Hessen3	HR3
HRT	HRT
HTV	HTV
ITV Network	ITV
Kabelkanal	KABL
London	LNDN
MDR	MDR
MTV	MTV
Nord3	N3
NDR1	NDR1
NDR3	NDR3
NED1	NED1
NED2	NED2
NED3	NED3
Network 2	NET2
NRK	NRK
N-TV	N-TV
Offener Kanal	OKAN
ORF1	ORF1
ORF2	ORF2
ORF3	ORF3
OWL 3	OWL3
Premiere	PRMI
PRO7	PRO7
RAI1	RAI1
RAI2	RAI2
RAI3	RAI3
RB1	RB1
RB3	RB3
Rikisutvarpid-S	RKPS
RTBF 1	RTB1
RTBF 2	RTB2
RTE 1	RTE1
RTL	RTL
RTL 2	RTL2
RTP	RTP
SAT	SAT
SAT 1	SAT1
Scottish TV	SCOT
SC4	SC4
SDR	SDR
SDR1	SDR1
SFB1	SFB1
SFB3	SFB3
SKY	SKY
Sky One	SKY1
Sky Net	SKYN
Sport	SPRT
SR 1	SR1
Super RTL	SRTL
STV Test	STVT
STV 1	STV1
STV 2	STV2
Suedwest3	SWR
SWF 1	SWF1
Schweiz4	SWZ4
TYNE TEES	TEES
Text	TEXT
TF1	TF1
TNT int	TNT
TRT int	TRT
TSI	TSI
TSR	TSR
TSW	TSW
TVE	TVE
TV Polonia	TVPA
TVP 1	TVP1
TVP 2	TVP2
TVS	TVS
TV2	TV2
TV5	TV5
Tele Zurich	TZUR
Ulster TV	ULST
Veronica	VERN
VIVA	VIVA
VIVA2	VIV2
VOX	VOX
VTM	VTM
VT4	VT4
West1	WDR1
West3	WDR3
YLE 1	YLE1
YLE 2	YLE2
Yorkshire TV	YORK
ZDF	ZDF
Zurich 1	ZUR1
3SAT	3SAT

* The "ID" abbreviation is what is shown on-screen in lieu of the station name. The "ID" abbreviation is listed in the Confirmation screen and is displayed on the TV screen each time the recorder is tuned to a different station.

TV Station Channel Number Guide

For customers in the U.K.

Only the main stations are listed. There are in addition many relay stations, and full lists are available from the BBC and ITV.

	BBC1	BBC2	ITV	CH4	CH5
London & South-East					
Bluebell Hill	40	46	43	65	—
Crystal Palace	26	33	23	30	37
Dover	50	56	66	53	—
Heathfield	49	52	64	67	—
Oxford	57	63	60	53	49
South-West					
Beacon Hill	57	63	60	53	—
Caradon Hill	22	28	25	32	—
Huntshaw Cross	55	62	59	65	67
Redruth	51	44	41	47	37
Stockland Hill	33	26	23	29	—
Channel Islands					
Fremont Point	51	44	41	47	—
South					
Hannington	39	45	42	66	35
Midhurst	61	55	58	68	—
Rowridge	31	24	27	21	—
West					
Mendip	58	64	61	54	37
East					
Sandy Heath	31	27	24	21	39
Sudbury	51	44	41	47	35
Tacolneston	62	55	59	65	52
Midlands					
Ridge Hill	22	28	25	32	35
Sutton Coldfield	46	40	43	50	37
The Wrekin	26	33	23	29	35
Waltham	58	64	61	54	35
North					
Belmont	22	28	25	32	56
Emley Moor	44	51	47	41	37
North-West					
Caldbeck	30	34	28	32	56
Winter Hill	55	62	59	65	48
North-East					
Bilsdale West Moor	33	26	29	23	35
Chatton	39	45	49	42	—
Pontop Pike	58	64	61	54	68
Scotland					
Angus	57	63	60	53	—
Black Hill	40	46	43	50	37
Sandale	22	—	—	—	—
Caldbeck	—	34	28	32	56
Creigkelly	31	27	24	21	48
Darvel	33	26	23	29	35
Durris	22	28	25	32	67
Eitshal	33	26	23	29	—
Keelylang Hill	40	46	43	50	—
Knock More	33	26	23	29	—
Rosemarkie	39	45	49	42	67
Rumster Forest	31	27	24	21	—
Selkirk	55	62	59	65	52
Wales					
Blaenplwyf	31	27	24	21	56
Carmel	57	63	60	53	—
Llanddona	57	63	60	53	—
Moel-y-Parc	52	45	49	42	—
Presely	46	40	43	50	37
Wenvoe	44	51	41	47	—
Northern Ireland					
Brougher Mountain	22	28	25	32	—
Divis	31	27	24	21	37
Limavady	55	62	59	65	—

Questions And Answers

PLAYBACK

Q. What happens if the end of the tape is reached during playback or search?
A. The tape is automatically rewound to the beginning.

……

Q. Can the video recorder indefinitely remain in the still mode?
A. No. It stops automatically after 5 minutes to protect the heads.

……

Q. During search, slow, still and frame-by-frame playback, I can't hear any audio. What's the problem?
A. This is normal.

……

Q. When returning from variable-speed search to normal playback, the picture is disturbed. Should I be concerned about this?
A. No, it is normal.

……

Q. Noise bars appear during variable-speed search. What's the problem?
A. This is normal.

……

Q. Sometimes, during Index Search, the video recorder can't find the programme I want to see. Why not?
A. There may be index codes too close together.

……

RECORDING

Q. When I pause and then resume a recording, the end of the recording before the pause is overlapped by the beginning of the continuation of recording. Why does this happen?
A. This is normal. It reduces distortion at the pause and resume points.

……

Q. Can the video recorder indefinitely remain in the Record-Pause mode?
A. No. The video recorder shuts off automatically after 5 minutes to protect the heads.

……

Q. What happens if the tape runs out during recording?
A. The video recorder automatically rewinds it to the beginning or, if Timer Recording, the cassette is ejected.

……

TIMER RECORDING

Q. "◌" and "◷" remain lit on the display panel. Is there a problem?
A. No. This is a normal condition for a timer recording in progress.

……

Q. Can I programme the timer while I'm watching a tape or a TV broadcast?
A. You won't see the picture as it is replaced by the on-screen menu, but the audio from the program or tape you're viewing can be heard.

……

ATTENTION
This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the recorder off and unplug the mains power cord. Then plug it in again and turn the recorder on. Take out the cassette. After checking the cassette, operate the unit as usual.

Troubleshooting

Before requesting service for a problem, use this chart to see if you can correct the trouble yourself. Small problems are often easily corrected, and this can save you the trouble of sending your video recorder off for repair.

POWER

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. No power is applied to the recorder.	• The mains power cord is disconnected.	Connect the mains power cord.
2. The clock is functioning properly, but the recorder cannot be powered.	• "⏲" is displayed on the display panel with Auto Timer set to "OFF".	Press the ⏲ button to turn the "⏲" indicator off.
3. The remote control won't function.	• The batteries are discharged.	Replace the dead batteries with new ones.

TAPE TRANSPORT

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The tape does not run during recording.	• "⋮" is displayed on the display panel.	Press **PLAY** to turn the "⋮" indicator off.
2. The tape will not rewind or fast-forward.	• The tape is already fully rewound or fast-forwarded.	Check the cassette.

PLAYBACK

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The playback picture does not appear while the tape is running.	• If you're using the RF connection . . . . . . the TV receiver's channel selector is not set to the VIDEO channel. . . . the recorder's VIDEO channel has not been correctly set. • If you're using the AV connection, the TV receiver is not set to the AV mode.	If you are using the RF connection . . . . . . set the TV receiver to the VIDEO channel. (☞ pg. 6) . . . Perform "Video Channel Set" (☞ pg. 40) If you are using the AV connection, set the TV to its AV mode.
2. Noise appears during visual search.	• This is normal.	
3. Noise appears during normal playback.	• The automatic tracking mode is engaged.	Try manual tracking (☞ pg. 28).
4. The playback picture is blurred or interrupted while TV broadcasts are clear or "USE CLEANING CASSETTE" message appears on the screen.	• The video heads may be dirty.	Use a dry cleaning cassette TCL-2UX or consult your JVC dealer.
5. Breaks are noticeable in Hi-Fi soundtrack.	• Automatic tracking is engaged.	Engage and adjust tracking manually (☞ pg. 28) or press **AUDIO** to change the soundtrack to "NORM" (☞ pg. 25).

RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Recording cannot be started.	• There is no cassette loaded, or the cassette loaded has had its Record Safety tab removed.	Insert a cassette, or using adhesive tape, reseal the slot where the tab was removed.
2. TV broadcasts cannot be recorded.	• "L-1", "L-2", "SAT" or "F-1" has been selected as the input mode.	Set to the desired preset.
3. Tape-to-tape editing is not possible.	• The source (another video recorder, camcorder) has not been properly connected. • All necessary power switches have not been turned on. • The input mode is not correct.	Confirm that the source is properly connected. Confirm that all units' power switches are turned on. Set the input mode to "L-1","L-2", "SAT" or "F-1".
4. Camcorder recording is not possible.	• The camcorder has not been properly connected. • The input mode is not correct.	Confirm that the camcorder is properly connected. Set the input mode to "L-1","L-2", "SAT" or "F-1".

TIMER RECORDING

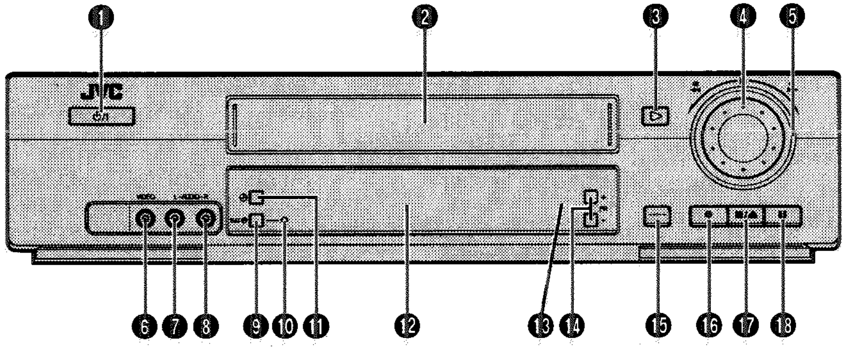
SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Timer recording won't work.	• The clock and/or the timer have been set incorrectly. • The timer is not engaged.	Re-perform the clock and/or timer settings. Press ⏲ and confirm that "⏲" is displayed on the display panel.
2. Timer programming is not possible.	• Timer recording is in progress.	Timer programming can't be performed while a timer recording is in progress. Wait until it finishes.
3. "⏲" and "📼" on the display panel won't stop blinking.	• The timer is engaged but there's no cassette loaded.	Load a cassette with the Record Safety tab intact, or cover the hole using adhesive tape.
4. The cassette is automatically ejected, and "⏲" and "📼" on the display panel won't stop blinking.	• The loaded cassette has had its Record Safety tab removed.	Remove the cassette and cover the hole with adhesive tape, or insert a cassette with the Record Safety tab intact.
5. "⏲" blinks for 10 seconds and the Timer mode is disengaged.	• ⏲ has been pressed when there are no programs in memory, or the timer record information has been programmed incorrectly.	Check the programmed data and re-programme as necessary, then press ⏲ again.
6. The cassette is automatically ejected, the power shuts off and "⏲" and "📼" won't stop blinking.	• The end of the tape was reached during timer recording.	The programme may not have been recorded in its entirety. Next time make sure you have enough time on the tape to record the entire programme.
7. VIDEO Plus+ does not timer-record properly.	• The recorder's preset positions have been set incorrectly.	Refer to "Guide Program Number Set" and re-perform the procedure (☞ pg. 39).

OTHER PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Whistling or howling is heard from the TV during camcorder recording.	• The camcorder's microphone is too close to the TV. • The TV's volume is too high.	Position the camcorder so its microphone is away from the TV. Turn the TV's volume down.
2. When scanning channels, some of them are skipped over.	• Those channels have been designated to be skipped.	If you need the skipped channels, restore them (☞ pg. 44).
3. The preset cannot be changed.	• Recording is in progress.	Press **PAUSE** to pause the recording, change presets, then press **PLAY** to resume recording.
4. Channel settings that were made manually seem to have changed or disappeared.	• After the manual settings were made, Auto Channel Set was performed.	Perform manual setting again.
5. No channels are stored in the recorder's memory.	• The TV aerial cable was not connected to the recorder when Auto Set Up was performed.	Connect the TV aerial cable to the recorder properly and turn off the recorder power once, then turn the recorder power back on again. The recorder will try Auto Set Up again (☞ pg. 6).

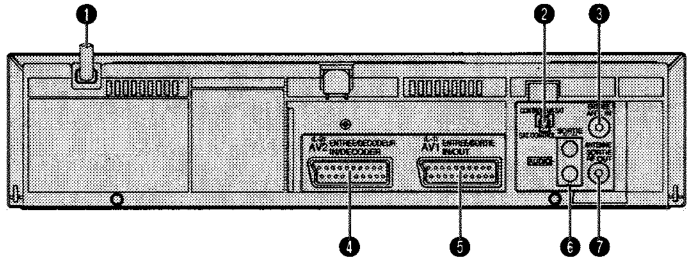
Index

FRONT VIEW



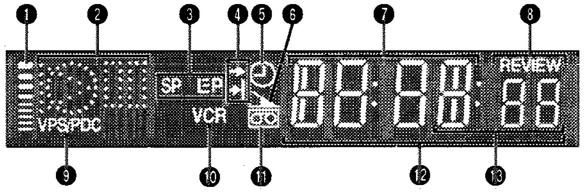
❶ **STANDBY/ON ⏻/I Button** turns recorder on/off (loading a cassette also turns power on).
❷ **Cassette Loading Slot** is where cassette is inserted; door closes, "cassette loaded" indicator lights up on front display panel.
❸ **PLAY Button** plays back tape ☞ pg. 12; cancels Pause, Still, Slow, Search modes. ☞ pg. 13
❹ **JOG Dial** plays back frame by frame during Still or Play mode. ☞ pg. 13
❺ **SHUTTLE Ring** rewinds or fast-forwards tape during Stop mode ☞ pg. 12; performs forward and reverse slow-motion and search during Still or Play mode. ☞ pg. 13
❻ **VIDEO Input Connector** enables easy connection of video output from another recorder or camcorder for editing. ☞ pg. 30
❼ **AUDIO Input Connector [L]** enables easy connection of audio output (mono) from another recorder, camcorder or other source for editing. ☞ pg. 30
❽ **AUDIO Input Connector [R]** enables easy connection of audio output (Hi-Fi) from another recorder, camcorder or other source for editing. ☞ pg. 30
❾ **SAT⊕ Button** enables/disables the Auto Satellite Prog Rec mode. ☞ pg. 27
❿ **SAT⊕ Indicator** lights up during Auto Satellite Prog Rec mode. ☞ pg. 27
⓫ **Timer ⊕ Button** engages timer-standby mode. ☞ pg. 17, 19
⓬ **Display Panel** provides clear view of various displays and indicators. ☞ pg. 53
⓭ **Infrared Beam Receiving Window** is where remote control should be aimed when in use.
⓮ **PR +/– Buttons** select a preset position. ☞ pg. 14
⓯ **– –:– – (Display) Button** switches display between clock time, tape remaining time, counter readings and preset position*. ☞ pg. 15
** Preset position is not displayed during playback.*
⓰ **RECORD Button** starts regular recording (press once), Instant Timer Recording (press twice); sets duration of ITR. ☞ pg. 14, 15
⓱ **STOP/EJECT Button** stops tape; ejects tape during Stop mode. ☞ pg. 12
⓲ **PAUSE Button** stops tape temporarily during recording ☞ pg. 14; stops tape temporarily during playback; plays back frame by frame with each additional press. ☞ pg. 13

REAR VIEW



❶ **Mains Power Cord** supplies power to recorder. ☞ pg. 5
❷ **SAT CONTROL Connector** enables connection of the provided Satellite Controller for timer recording with a satellite receiver. ☞ pg. 10
❸ **ANT. IN Connector** enables connection of aerial. ☞ pg. 5
❹ **AV2 (L-2) IN/DECODER Connector** enables connection of satellite receiver, decoder or second recorder; input recordable when "L-2" selected. ☞ pg. 26, 31
❺ **AV1 (L-1) IN/OUT Connector** enables AV connection to TV or second recorder; input recordable when "L-1" selected. ☞ pg. 5, 31
❻ **AUDIO OUT (L/R) Connectors** enable connection of audio cassette recorder, TV or second video recorder for dubbing. ☞ pg. 37
❼ **RF OUT Connector** enables connection to aerial terminal of TV receiver. ☞ pg. 5

DISPLAY PANEL

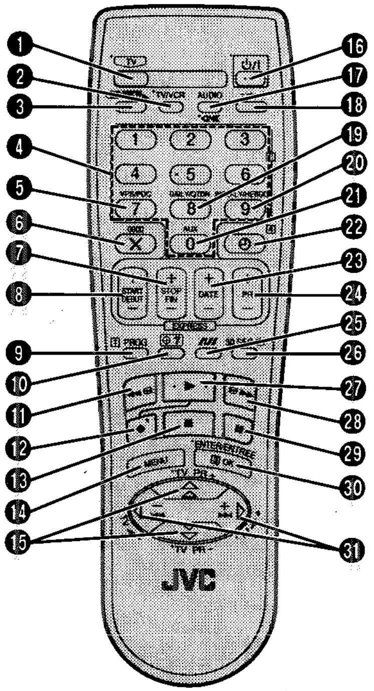


❶ **B.E.S.T. Picture System Display** lights from bottom to top while B.E.S.T. is active. ☞ pg. 22
❷ **Symbolic Mode Indicators**

PLAY: FF/REW VARIABLE SEARCH:	▷	STILL: SLOW:	▷▥
		RECORD:	○
		RECORD PAUSE:	○▥

❸ **Tape Speed Indicators** display mode of recording; light during Record or Play mode. ☞ pg. 14
** EP is only for NTSC playback.*
❹ **Programme Time Indicators** show the programme start time (|▸) and the programme stop time (▸|) for timer-recording. ☞ pg. 18
❺ **"Timer" Indicator** lights when ⊕ has been pressed to engage Timer mode. ☞ pg. 17, 19
❻ **Tape Remaining Time Indicator** displays time remaining on tape when certain buttons are pressed. ☞ pg. 15
❼ **Channel Display** shows preset position where the station currently being received is stored.
Clock Display shows current time. ☞ pg. 8
❽ **Instant REVIEW Indicator** blinks after timer-recording and shows how many programmes have been timer-recorded. ☞ pg. 24
❾ **PDC Indicator** lights when PDC has been engaged for timer recording. ☞ pg. 17, 19
** VPS (Video Programme System) recording is not currently available in the U.K. and not possible with this recorder.*
❿ **VCR Indicator** lights when the video recorder is in the video mode. At this point, the TV automatically enters AV mode. ☞ pg. 12
⓫ **"Cassette Loaded" Mark** lights once a cassette is inserted; remains lit until cassette ejected.
⓬ **Counter** shows time elapsed since playback or recording began.
With ◣ displayed, shows time remaining from current tape position to end of tape (☞ pg. 15). Counter, Preset Position*, Clock and Tape Remaining Time Display appear alternately when – –:– – **(Display)** is pressed.
** Preset Position is not displayed during playback.*
⓭ **Mode** shows external input mode selected (L-1, L-2, SAT* or F-1).
** When "L-2 SELECT" is set to "SAT" (☞ pg. 32), "SAT" appears instead of "L-2".*

REMOTE CONTROL



Buttons with a small dot on the left side of the name can also be used to operate your JVC TV while holding down the **TV** button.
☞ "Operating JVC TVs" on page 55.

This remote control transmits A code signals only; it is not applicable to B code signals.

① **TV Button** enables remote control of connected TV. ☞ "Operating JVC TVs" on page 55

② **TV/VCR Button** switches connected TV's mode between TV and AV. ☞ pg. 12 and "Operating JVC TVs" on page 55

③ **REVIEW Button** "reviews" timer-recorded programme. ☞ pg. 24

④ **NUMBER Keys** are used in preset position selection ☞ pg. 14, VIDEO Plus+ timer programming ☞ pg. 16.

⑤ **PDC Button** enables/disables PDC recording. ☞ pg. 17, 19

** VPS (Video Programme System) recording is not currently available in the U.K. and not possible with this recorder.*

⑥ **X Button** cancels timer-programme. ☞ pg. 20
0000 Button resets counter to 0:00:00. ☞ pg. 15

⑦ **STOP +/– Button** inputs programme Stop Time. ☞ pg. 18

⑧ **START +/– Button** accesses Regular Program screen; inputs programme Start Time. ☞ pg. 18

⑨ **PROG Button** accesses VIDEO Plus+ Program screen. ☞ pg. 16

⑩ **⏲ ? Button** accesses Program screens/displays to check the programme that you have programmed (next programme's information screen/display appears each time button is pressed). ☞ pg. 20

⑪ **Rewind [REW] Button** rewinds tape ; initiates reverse high-speed search. ☞ pg. 12, 13

⑫ **Record Button** — same as button on recorder. ☞ pg. 14, 15

⑬ **Stop Button** — same as button on recorder. ☞ pg. 12

⑭ **MENU Button** accesses Menu screen. ☞ pg. 9

⑮ **△▽ Button** is used for selection in on-screen menus. ☞ pg. 9
TV PR +/– selects the connected TV's/ satellite receiver's channel. ☞ "Operating JVC TVs" on page 55

⑯ **STANDBY/ON ⏻/I Button** — same as button on recorder.

⑰ **AUDIO Button** changes output sound mode. ☞ pg. 25
🔇 (TV Muting) Button mutes sound of connected TV. ☞ "Operating JVC TVs" in the right column.

⑱ **– –:– – (Display) Button** switches display between clock time, tape remaining time, counter readings and preset position*. ☞ pg. 15

** Preset position is not displayed during playback.*

⑲ **DAILY Button** enables timer recording of daily serials. ☞ pg. 17, 19

⑳ **WEEKLY Button** enables timer recording of weekly serials. ☞ pg. 17, 19

㉑ **AUX Button** selects recorder's auxiliary input mode. ☞ pg. 30, 31

㉒ **⏲ (TIMER) Button** — same as button on recorder. ☞ pg. 17, 19

㉓ **DATE +/– Button** inputs date of programme for timer recording. ☞ pg. 18

㉔ **PR +/– Button** — same as button on recorder. ☞ pg. 14

㉕ **Auto Tracking Button (///)** enables/disables auto tracking mode during playback ☞ pg. 28
SP/LP Button selects tape speed. ☞ pg. 14

㉖ **30 SEC Button** initiates a 30-second period of fast-motion playback. ☞ pg. 24

㉗ **Play Button** — same as button on recorder. ☞ pg. 12, 13

㉘ **Fast Forward [FF] Button** fast-forwards tape; initiates forward high-speed search. ☞ pg. 12, 13

㉙ **Pause Button** — same as button on recorder. ☞ pg. 13, 14

㉚ **OK Button** enters selections made in on-screen menus. ☞ pg. 9

㉛ **◁▷ Button** initiates functions such as Index Search ☞ pg. 24, variable-speed search, frame by frame playback. ☞ pg. 13
TV ◿ +/– Button controls volume of connected TV. ☞ "Operating JVC TVs" in the right column.

How To Use

The remote control can operate most of your video recorder's functions, as well as basic functions of JVC TV sets. (See below.)

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

Operating JVC TVs

To operate your TV, while holding down the **TV** button, press the corresponding button: **STANDBY/ON ⏻/I, TV/VCR, TV PR +/–, TV ◿ +/–, 🔇** (TV Muting).

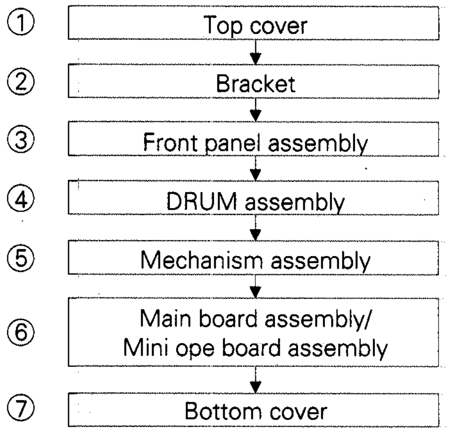
NOTES:

- *When inserting the batteries, be sure to insert in the correct directions as indicated under the battery cover.*
- *Depending on the type of JVC TV, there may be cases where some or all functions cannot be operated using the remote control.*
- *If the remote control doesn't work properly, remove its batteries, wait a short time, replace the batteries and then try again.*

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY FLOW CHART

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.



1.2 HOW TO READ THE DISASSEMBLY AND ASSEMBLY

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	3(S1a), (S1b)	
②	BRACKET	D2	2(S2)	
③	FRONT PANEL ASSEMBLY	D3	7(L3), CN7003(WR3) [HR-J770EK/J770EU]	<NOTE 3a> <NOTE 3b> <NOTE 3c>

(1) (2) (3) (4) (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) NO. of parts Figures.

(2) Part name to be removed or installed.

(3) Fig.No. showing procedure or part location

(4) Identification of part to be removed,unhooked,unlocked, released,unpluged,unclamped or unsoldered. P = Spring, W = Washer, S = Screw, L = Locking tab, CNxx(WRxx) = Remove the wire (WRxx) from the connector (CNxx).

NOTE: *The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.*

(5) Adjustment information for installation

1.3 DISASSEMBLY/ASSEMBLY METHOD

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	3(S1a), (S1b)	
②	BRACKET	D2	2(S2)	
③	FRONT PANEL ASSEMBLY	D3	7(L3), CN7003(WR3) [HR-J770EK/J770EU]	<NOTE 3a> <NOTE 3b> <NOTE 3c>
④	DRUM ASSEMBLY	D4	3(S4a),CN1(WR4a), CN1(WR4b),2(S4b), DRUM SHIELD	<NOTE 3c>
⑤	MECHANISM ASSEMBLY	D5	2(S5a),(S5b),(S5c), 2(L5), CN1(WR5)	<NOTE 3c> <NOTE 5a> <NOTE 5b> <NOTE 5c>
⑥	MAIN BOARD ASSEMBLY/ MINI OPE BOARD ASSEMBLY [HR-J670EK/J670EU]	D6	3(S6a), (S6b), (S6c),6(L6a),(L6b), [HR-J670EK/ J670EU], CN7003(WR6) [HR-J670EK/ J670EU]	<NOTE 3c> <NOTE 6>
⑦	BOTTOM COVER	D7	2(L7a), 9(L7b)	<NOTE 7>

<NOTE3a>
When reattaching the Front panel assembly, make sure that the door opener ⓐ of the Cassette holder assembly is lowered in position prior to the reinstallation.

<NOTE3b>
When reattaching the Front panel assembly, pay careful attention to the switch lever not to make it touch the switch knob ⓑ of the Main board assembly from the side.
(If the switch knob of the Main board assembly is damaged, cassette loading is impossible.)

<NOTE3c>
Be careful not to damage the connector and wire etc. during connection and disconnection.
When connecting the wire to the connector, be careful with the wire direction.

<NOTE5a>
When it is required to remove the screws (S5a) retaining the Mechanism assembly, please refer to the "Procedures for Lowering the Cassette holder assembly"(See on pages 1-3).

<NOTE5b>
When removing the Mechanism assembly only, unhook the two spacers connecting it with the Main board assembly with pliers from the back side of the Main board assembly first, and then remove the Mechanism assembly.

<NOTE5c>
When reattaching the Mechanism assembly to the Main board assembly, take care not to damage the sensors on the Main board assembly (D3001: LED, Q3002: Start sensor, Q3003: End sensor).

<NOTE6>
When removing the PC Support from the bottom chassis, take care not to damage the locking portion of the PC Support.

<NOTE7>
When removing the bottom cover, push down the two tabs (L7a) to slide the bottom cover.

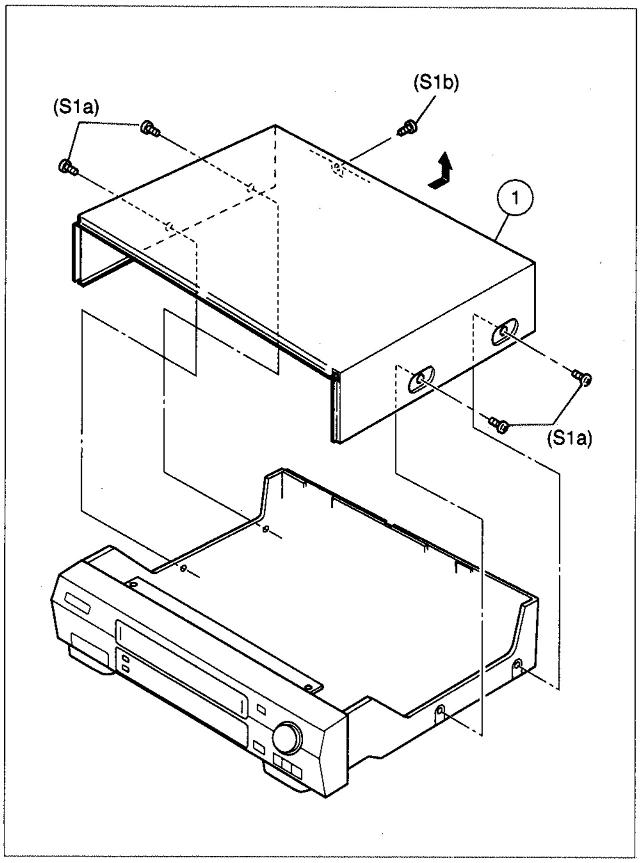

(S1a)
(S1b)
1
(S1a)

Fig. D1

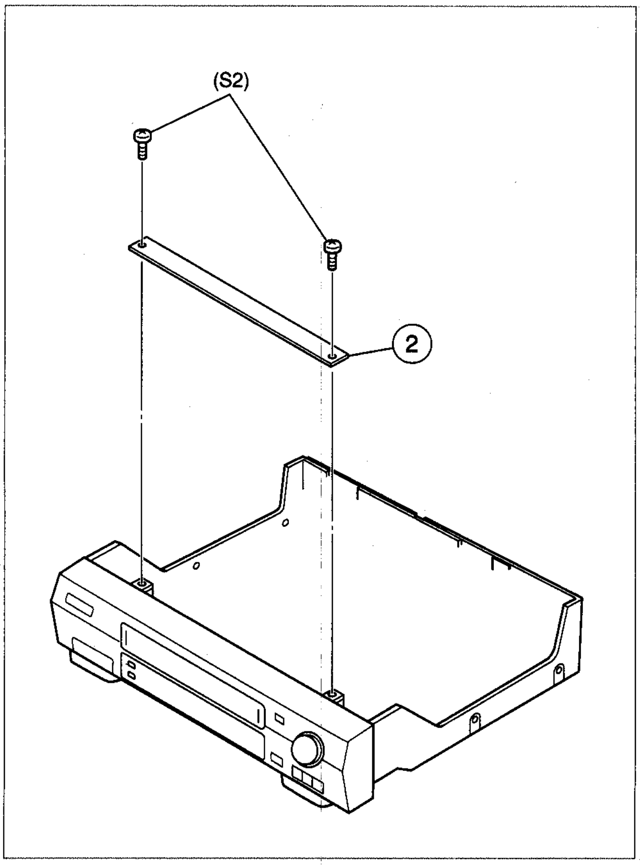


Fig. D2

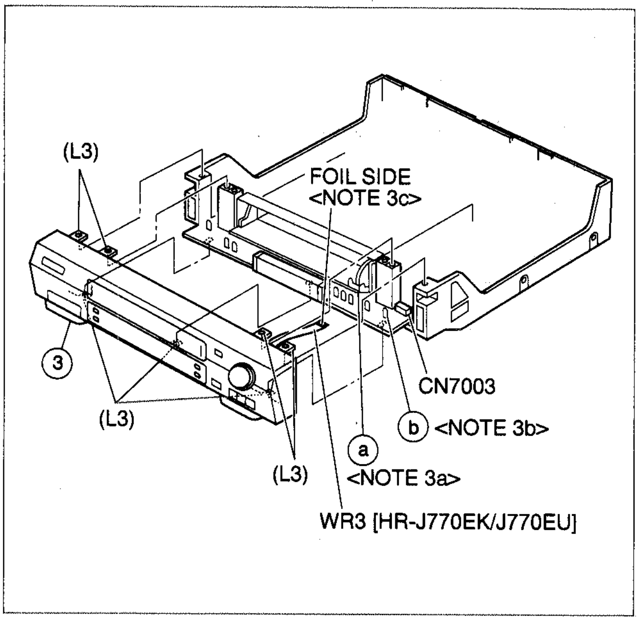

(L3)
FOIL SIDE
<NOTE 3c>
3
CN7003
(L3)
ⓑ <NOTE 3b>
ⓐ
(L3)
<NOTE 3a>
WR3 [HR-J770EK/J770EU]

Fig. D3

NOTE: When installing the DRUM assembly, secure the screws (S4a) in the order of ⓐ, ⓑ, ⓒ.

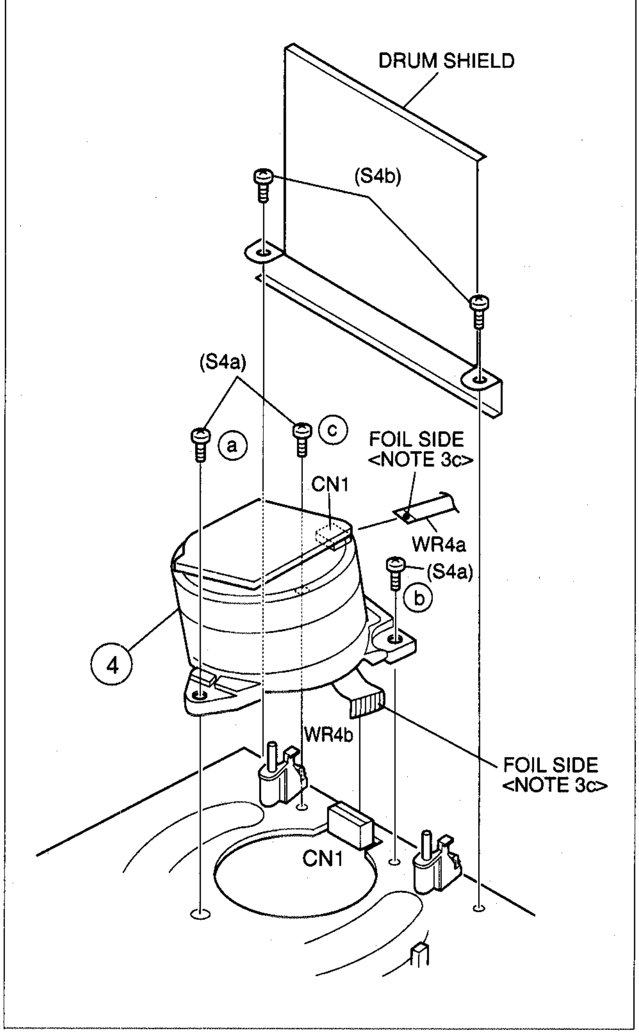

DRUM SHIELD
(S4b)
(S4a)
ⓐ
ⓒ
FOIL SIDE
<NOTE 3c>
CN1
WR4a
(S4a)
ⓑ
4
WR4b
FOIL SIDE
<NOTE 3c>
CN1

Fig. D4

NOTE: When installing the Mechanism assembly, secure the screws (S5a) in the order of ⓐ, ⓑ.

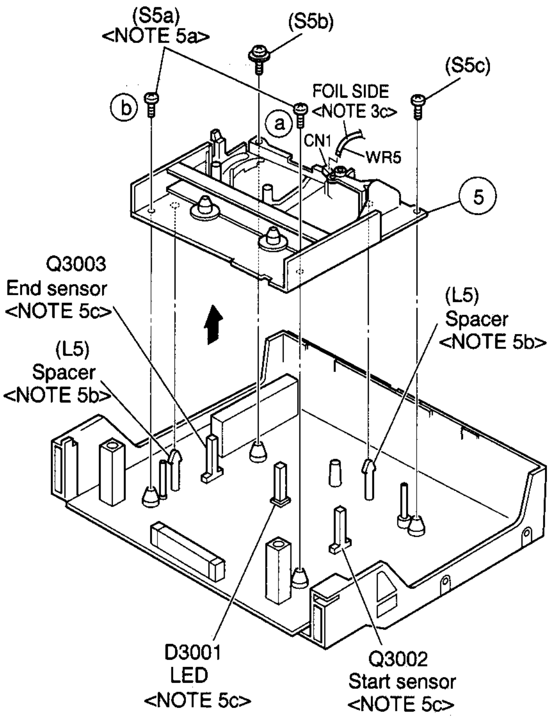

(S5a)
<NOTE 5a>
(S5b)
(S5c)
ⓑ
ⓐ
FOIL SIDE
<NOTE 3c>
CN1
WR5
5
Q3003
End sensor
<NOTE 5c>
(L5)
Spacer
<NOTE 5b>
(L5)
Spacer
<NOTE 5b>
D3001
LED
<NOTE 5c>
Q3002
Start sensor
<NOTE 5c>

Fig. D5

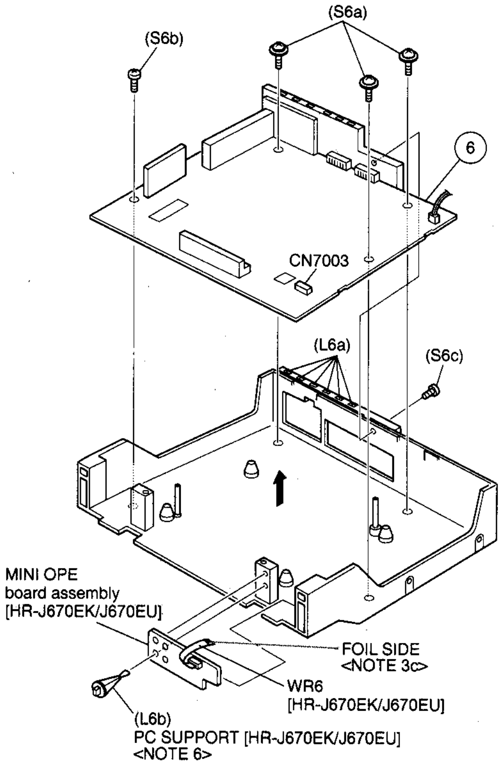

(S6b)
(S6a)
6
CN7003
(L6a)
(S6c)
MINI OPE
board assembly
[HR-J670EK/J670EU]
FOIL SIDE
<NOTE 3c>
WR6
[HR-J670EK/J670EU]
(L6b)
PC SUPPORT [HR-J670EK/J670EU]
<NOTE 6>

Fig. D6

Procedures for Lowering the Cassette holder assembly

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two screws unscrewed when removing the Mechanism assembly.

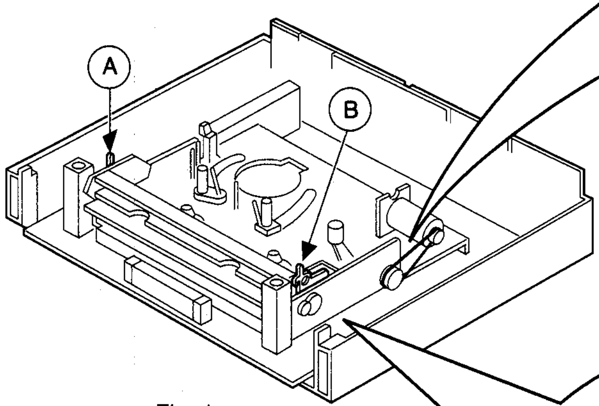


Fig. 1

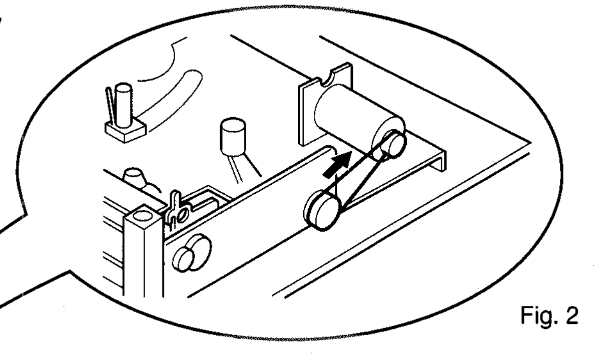


Fig. 2

Turn the loading motor pulley in the direction as indicated by Fig.2. As bothⒶandⒷlevers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of Ⓐ,Ⓑ,Ⓑ,Ⓐ. When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/ down movement.

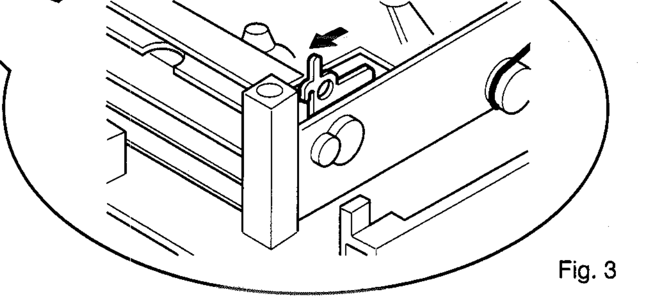


Fig. 3

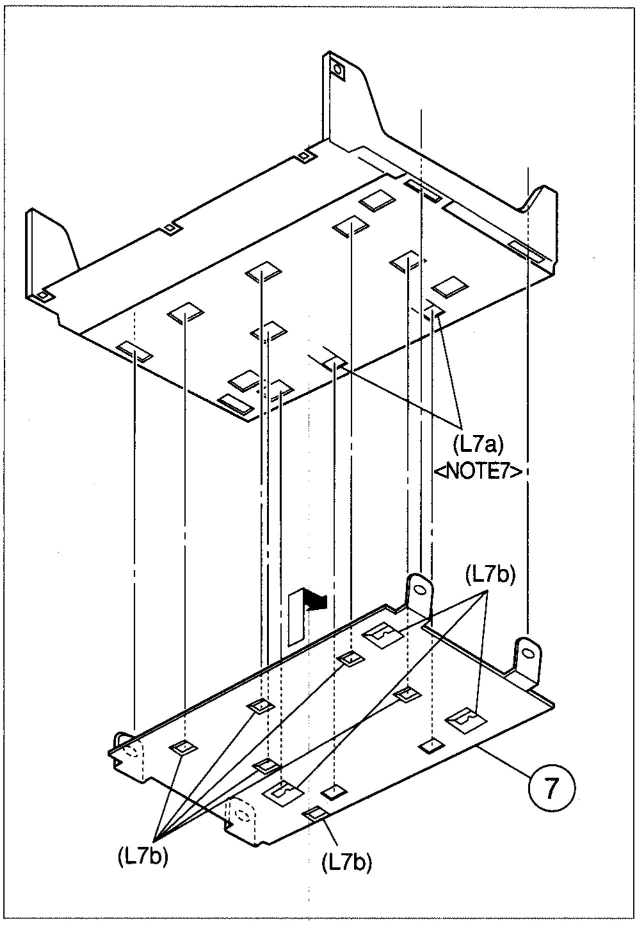


Fig. D7

1.4 SERVICE POSITION

In order to facilitate diagnosis and the repair of the Mechanism assembly, this unit is constructed so as to allow the Mechanism and Main board assemblies to be removed together from the Bottom chassis assembly.

1.4.1 How to take out the Mechanism and Main board assemblies

(1) Remove the Top cover, Bracket and Front panel assembly, and remove the Mini ope board assembly for HR-J670EK/J670EU. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)

(2) Lower the cassette holder, and make the preparations required in order to remove the screws from the Mechanism assembly. (Refer to the "Procedures for Lowering the Cassette holder assembly" on pages 1-3 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)

(3) Take out 2 screws Ⓐ, 1 screw Ⓑ and 1 screw Ⓒ as shown in Fig. 1-4-1.

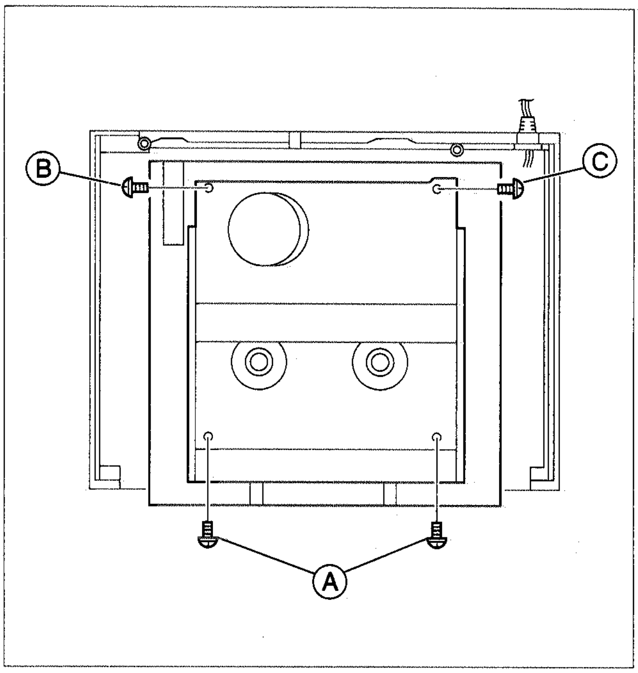


Fig. 1-4-1

(4) Take out 3 screws Ⓓ, 1 screw Ⓒ and 1 screw Ⓔ.

(5) Remove the Main board and Mechanism assemblies together while holding the edge of the Main board assembly. At this stage be careful of the power cord and prongs of the jacks on the back side. (See Fig. 1-4-2.)

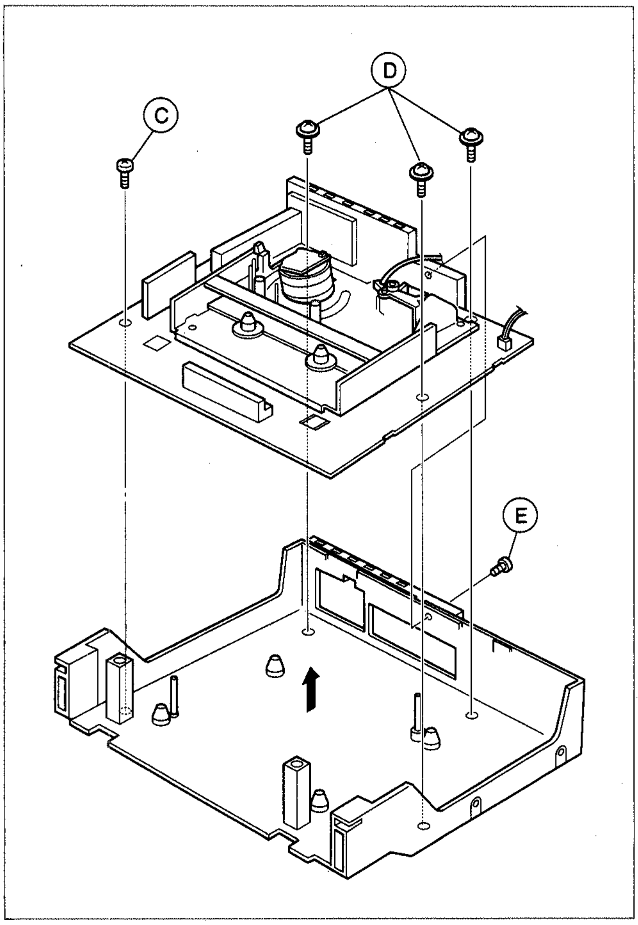


Fig. 1-4-2

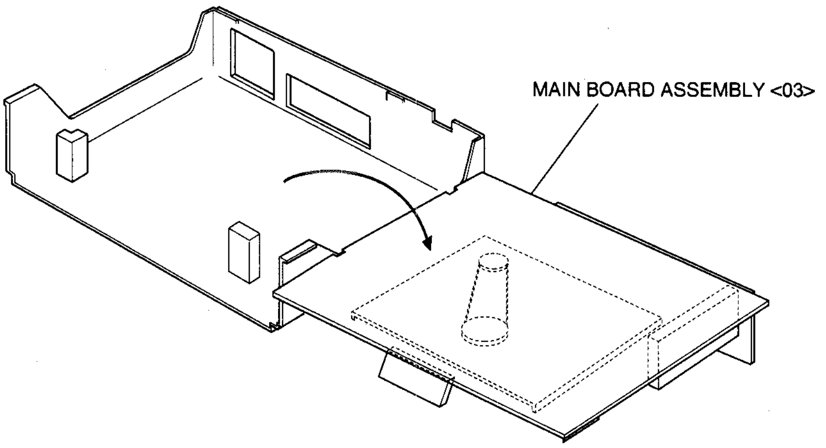


Fig. 1-4-3

(6) Connect the power cord to the wall socket, and lift the cassette holder.
(Before turning on the power make sure that there is nothing which may produce a short circuit, such as faulty soldering.)

(7) When performing a diagnosis or repair of the Main board assembly with a cassette tape in place, turn on the power, insert a cassette tape, and turn over the Main board and Mechanism assemblies together.

NOTES:
- *When carrying out diagnosis and repair of the Main board assembly in the service position, be sure to ground both the Main board and the Mechanism assemblies.*

  If they are improperly grounded, there may be noise on the playback picture or the FDP counter display may move even when the mechanism is kept in an inoperative status.
- *When performing diagnostics of the tape playback or recording condition in the "SERVICE POSITION", enter the desired mode before turning the set upside down, and do not change the mode during diagnostics while the set is placed upside down. If you want to switch the mode, turn the set to the normal position.*

1.5 MECHANISM SERVICE MODE

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "MECHANISM SERVICE MODE".

1.5.1 How to set the "MECHANISM SERVICE MODE"

(1) Disconnect VCR from AC.
(2) Connect TPGND and TP7001(TEST) on the Main board assembly with a jump wire.
(3) Connect VCR to AC.
(4) Press the POWER button.
(5) With lock levers ⒶⒷ on the left and right of the Cassette holder assembly pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers ⒶⒷ, refer to the "Procedures for Lowering the Cassette holder assembly" on pages 1-3 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(6) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

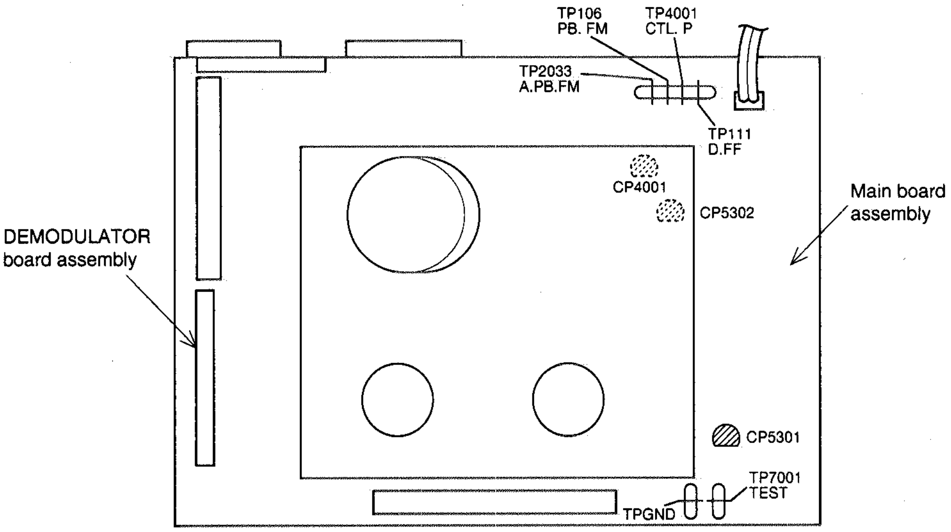


Fig. 1-5-1

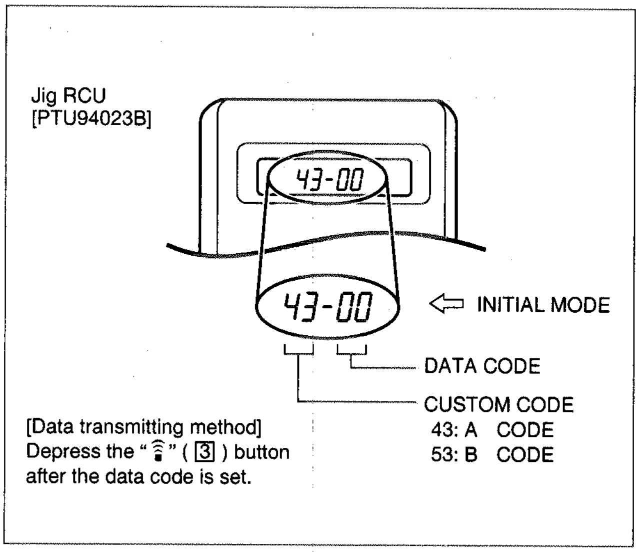
1.6 EMERGENCY DISPLAY FUNCTION

This unit has a function for storing the history of the past two emergencies (EMG) and displaying them on each FDP. With the status of the VCR and mechanism at the moment an emergency occurred can also be confirmed.

FDP display switching

FDP display	0 : 00 : 00	Normal display
↓	E : ** : **	Emergency content display (E:Latest:Previous)
↓	*1: *2 : 34	Emergency detail display ①
↓	*5: *6 : *7	Emergency detail display ②

NOTES: • *The emergency detail display ① ② show the information on the latest emergency.*
It becomes " - - : - - : - -" when there is no latest emergency record.
• *When using the Jig RCU, set its custom code to match the custom code of the VCR.*



[Data transmitting method]
Depress the "⇡" (3) button after the data code is set.

Fig. 1-6-1 Jig RCU

1.6.1 Displaying the emergency information

(1) Transmit the code "59" from the Jig RCU.
The FDP shows the emergency content in the form of "E:\**:**".

Example 1 E : 01 : 03
Previous emergency
Latest emergency

Example 2 E : - - : - - ← No emergency record

NOTE: • *For the emergency content, see "1.6.3 Emergency content description".*

(2) Transmit the code "59" from the Jig RCU again.
The FDP shows the emergency detail information ① in the form of "*1 : *2 : 34".

*1 : Deck operation mode at the moment of emergency
*2 : Mechanism operation mode at the moment of emergency
3- : Mechanism sensor information at the moment of emergency
-4 : Mechanism mode position at the moment of emergency

NOTE: • *For the emergency detail information ①, see "1.6.4 Emergency detail information ①".*

(3) Transmit the code "59" from the Jig RCU once again.
The FDP shows the emergency detail information ② in the form of "*5 : *6 : *7".

*5 : Type of the cassette tape in use ①.
*6 : Winding position of the cassette tape in use
*7 : Type of the cassette tape in use ② (Winding area)

NOTE: • *For the emergency detail information ②, see "1.6.5 Emergency detail information ②".*

(4) Transmit the code "59" from the Jig RCU once again to reset the display.

1.6.2 Clearing the emergency history

(1) Display the emergency history.
(2) Transmit the code "36" from the Jig RCU.
(3) Reset the emergency display.

1.6.3 Emergency content description

NOTE: *Emergency contents "E08/E09" are for the model with Dynamic Drum (DD).*

FDP	CONTENT	CAUSE
E01: Loading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the loading direction, [E:01] is identified and the power is turned off.	① The mechanism is locked in the middle of mode transition. ② The mechanism is locked at the loading end due to the encoder position reading error during mode transition. ③ Power is not supplied to the loading MDA.
E02: Unloading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the unloading direction, [E:02] is identified and the power is turned off.	① The mechanism is locked in the middle of mode transition. ② The mechanism is locked at the unloading end due to the encoder position reading error during mode transition. ③ Power is not supplied to the loading MDA.
E03: Take Up Reel Pulse EMG	When the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [E:03] is identified, the pinch rollers are turned off and stopped, and the power is turned off. However, the reel EMG is not detected in STILL/SLOW modes.	① The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because; 1) The idler gear is not meshed with the take-up reel gear; 2) The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension); 3) The take-up reel sensor does not output the FG pulse. ② The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because; 1) The idler gear is not meshed with the supply reel gear. 2) The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension); 3) The supply reel sensor does not output the FG pulse. ③ Power is not supplied to the reel sensors.
E04: Drum FG EMG	When the drum FG pulse has not been input for more than 3 seconds in the drum rotating mode, [E:04] is identified, the pinch rollers are turned off and stopped, and the power is turned off.	① The drum could not start or the drum rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high; 2) The tape is damaged or a foreign object (grease, etc.) adheres to the tape. ② The drum FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (hall device) of the drum is faulty. ③ The drum control voltage (DRUM CTL V) is not supplied to the MDA. ④ Power is not supplied to the drum MDA.
E05: Cassette Eject EMG	When the eject operation does not complete in 3 seconds after the start, [E:05] is identified, the pinch rollers are turned off and stopped, and the power is turned off. When the cassette insertion operation does not complete in 3 seconds after the start, the cassette is ejected. In addition, when the operation does not complete within 3 seconds after the start, [E:05] is also identified and the power is turned off immediately.	① The cassette cannot be ejected due to a failure in the drive mechanism of the housing. ② When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque. Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure. ③ The sensor/switch for detecting the end of ejection are not functioning normally. ④ The loading motor drive voltage is lower than specified or power is not supplied to the motor (MDA). ⑤ When the user attempted to eject a cassette, a foreign object (or perhaps the user's hand) was caught in the opening of the housing.
E06: Capstan FG EMG	When the capstan FG pulse has not been generated for more than 1 second in the capstan rotating mode, [E:06] is identified, the pinch rollers are turned off and stopped, and the power is turned off.However, the capstan EMG is not detected in STILL/SLOW/FF/REW modes.	① The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high (mechanical lock); 2) The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.). ② The capstan FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (MR device) of the capstans is faulty. ③ The capstan control voltage (CAPSTAN CTL V) is not supplied to the MDA. ④ Power is not supplied to the capstan MDA.
E07: SW Power Short-Circuit EMG	When short-circuiting of the SW power supply with GND has lasted for 0.5 second or more, [E:07] is identified, all the motors are stopped and the power is turned off.	① The SW 5 V power supply circuit is shorted with GND. ② The SW 12 V power supply circuit is shorted with GND.
E08: DD Initialized (Absolute Position Sensor) EMG	When DD tilting does not complete in 4 seconds, [E:08] is identified, the tilt motor is stopped and the power is turned off.	① The absolute value sensor is defective. (The soldered parts have separated.) ② The pull-up resistor at the absolute sensor output is defective. (The soldered parts have separated.) ③ Contact failure or soldering failure of the pins of the connector (board-to-board) to the absolute value sensor. ④ The absolute value sensor data is not sent to the System Controller CPU.
E09: DD FG EMG	When the DD FG pulse is not generated within 2.5 seconds, [E:09] is identified, the tilt motor is stopped and the power is turned off.	① The FG sensor is defective. (The soldered parts have separated.) ② The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.) ③ Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor. ④ The power to the sensor is not supplied. (Connection failure/soldering failure) ⑤ The FG pulse is not sent to the System Controller CPU. ⑥ The tilt motor is defective. (The soldered parts have separated.) ⑦ The drive power to the tilt motor is not supplied. (Connection failure/soldering failure) ⑧ The tilt motor drive MDA - IC is defective. ⑨ Auto-recovery of the DD tilting cannot take place due to overrun.
E0A: Supply Reel Pulse EMG	When the supply reel pulse has not been generated for more than 10 seconds in the capstan rotating mode, [E:0A] is identified and the cassette is ejected (but the power is not turned off). However, note that the reel EMG is not detected in the SLOW/STILL mode.	① The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because; 1) PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle; 2) A mechanical factor caused tape slack inside and outside the supply reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the FWD transport, so the pulse is not generated until then; 3) The FG pulse output from the supply reel sensor is absent. ② The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.). 1) REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle; 2) A mechanical factor caused tape slack inside and outside the take-up reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the REV transport, so the pulse will not be generated until that time; 3) The FG pulse output from the take-up reel sensor is absent. ③ The power to a reel sensor is not supplied.
EU1: Head clog warning	Presupposing the presence of the control pulse output in the PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard to the A.FM output) has remained below a certain threshold level for more than 10 seconds, [E:U1] is identified and recorded in the emergency history. During the period in which a head clog is detected, the FDP and OSD repeat the "3-second warning display" and "7-second noise picture display" alternately. EMG code : "E:U1" / FDP : "U:01" / OSD : "Try cleaning tape." The head clog warning is reset when the above-mentioned threshold has been exceeded for more than 2 seconds or the mode is changed to another mode than PLAY.	

Table 1-6-1

1.6.4 Emergency detail information ①

The status (electrical operation mode) of the VCR and the status (mechanism operation mode/sensor information) of the mechanism in the latest emergency can be confirmed based on the figure in EMG detail information ①.

[FDP display]

∗1 : ∗2 : 34

∗1 : Deck operation mode at the moment of emergency
∗2 : Mechanism operation mode at the moment of emergency
3– : Mechanism sensor information at the moment of emergency
–4 : Mechanism mode position at the moment of emergency

∗1 : Deck Operation Mode

Display	Deck Operation Mode
00	STOP with pinch roller pressure off (or tape present with P.OFF)
01	STOP with pinch roller pressure on
04	PLAY
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH (variable speed)
4C	AUDIO DUB
6E	INSERT REC (VIDEO+AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO+AUDIO) PAUSE

3– : Mechanism Sensor Information

Display	Mechanism Sensor Information			
	S-VHS SW	REC SAFETY SW	START SENSOR	END SENSOR
0–	VHS	Tab broken	ON	ON
1–	VHS	Tab broken	ON	OFF
2–	VHS	Tab broken	OFF	ON
3–	VHS	Tab broken	OFF	OFF
4–	VHS	Tab present	ON	ON
5–	VHS	Tab present	ON	OFF
6–	VHS	Tab present	OFF	ON
7–	VHS	Tab present	OFF	OFF
8–	S-VHS	Tab broken	ON	ON
9–	S-VHS	Tab broken	ON	OFF
A–	S-VHS	Tab broken	OFF	ON
B–	S-VHS	Tab broken	OFF	OFF
C–	S-VHS	Tab present	ON	ON
D–	S-VHS	Tab present	ON	OFF
E–	S-VHS	Tab present	OFF	ON
F–	S-VHS	Tab present	OFF	OFF

∗2 : Mechanism Operation Mode

Display	Mechanism Operation Mode
00	STOP with pinch roller pressure off
01	STOP with pinch roller pressure on
02	U/L STOP (or tape being loaded)
04	PLAY
05	PLAY (x1-speed playback using JOG)
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH
4C	AUDIO DUB
6E	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
C7	REV SEARCH (x1-speed reverse playback using JOG)
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO + AUDIO) PAUSE
F0	Mechanism being initialized
F1	POWER OFF as a result of EMG
F2	Cassette being inserted
F3	Cassette being ejected
F4	Transition from STOP with pinch roller pressure on to STOP with pinch roller pressure off
F5	Transition from STOP with pinch roller pressure on to PLAY
F6	Transition from STOP with pinch roller pressure on to REC
F7	Cassette type detection SEARCH before FF/REW is being executed
F8	Tape being unloaded
F9	Transition from STOP with pinch roller pressure off to STOP with pinch roller pressure on
FA	Transition from STOP with pinch roller pressure off to FF/REW
FB	Transition from STOP with pinch roller pressure off to REC.P (T.REC,etc.)
FC	Transition from STOP with pinch roller pressure off to cassette type detection SEARCH
FD	Short REV being executed after END sensor on during unloading
FE	Tension loosening being executed after tape loading (STOP with pinch roller pressure on)

–4 : Mechanism Mode Position

Display	Mechanism Mode Position
–0	EJECT position
–1	U/L STOP position
–2	Tape being loaded/unloaded (When the pole base is located on the rear side of the position just beside the drum)
–3	FF/REW position
–4	STOP with pinch roller pressure off
–5	REV (REV STILL/SLOW) position
–6	FWD (FWD STILL/SLOW) position, PLAY position
–7	Intermediate position during transition between other mechanism modes

NOTE: • *As the display is always "–7" at any intermediate position between mechanism modes, the position of transitory EMG may sometimes not be locatable.*

1.6.5 Emergency detail information ②

The type of the cassette tape and the cassette tape winding position can be confirmed based on the figure in EMG detail information ②.

[FDP display]

*5 : *6 : *7

*5 : Type of the cassette tape in use ①
*6 : Winding position of the cassette tape in use
*7 : Type of the cassette tape in use ② (Winding area)

NOTE: • *EMG detail information ② is the reference information stored using the remaining tape detection function of the cassette tape. As a result, it may not identify cassette correctly when a special cassette tape is used or when the tape has variable thickness.*

***5 : Cassette tape type ①**

Display	Cassette Tape Type ①
00	Cassette type not identified
16	Large reel/small reel (T-0 to T-15/T-130 to T-210) not classified
82	Small reel, thick tape (T-120) identified /thin tape (T-140) identified
84	Large reel (T-0 to T-60) identified
92	Small reel, thick tape (T-130) identified /thin tape (T-160 to T-210) identified
93	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) not classified
C3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
D3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
E1	C cassette, thick tape (TC-0 to TC-20) identified
E2	Small reel, thick tape (T-0 to T-100) identified
E9	C cassette, thin tape (TC-30 to TC-40) identified
F1	C cassette, thick tape/thin tape (TC-10 to TC-40) not classified

NOTES: • *Cassette tape type ① is identified a few times during mode transition and the identification count is variable depending on the cassette tape type. If an EMG occurs in the middle of identification, the cassette tape type may not be able to be identified.*
• *If other value than those listed in the above table is displayed, the cassette tape type is not identified.*

***6 : Cassette tape winding position**

The cassette tape winding position at the moment of EMG is displayed by dividing the entire tape (from the beginning to the end) in 22 sections using a hex number from "00" to "15".

"00" : End of winding
"15" : Beginning of winding
"FF" : Tape position not identified

***7 : Cassette tape type ② (Winding area)**

Display	Cassette Tape Type ②	
00	Cassette type not identified	
07	Small reel, thick tape	T-5
08 - 0E	C cassette, thick tape	TC-10
09 - 15	C cassette, thick tape	TC-20P
0A - 0B	Small reel, thick tape	T-20
0A - 16	C cassette, thin tape	TC-30
0A - 16	C cassette, thin tape	TC-40
0D - 0F	Small reel, thick tape	T-40
11 - 14	Small reel, thick tape	T-60
15 - 18	Small reel, thick tape	T-80/DF-160
17 - 1A	Small reel, thick tape	T-80/DF-180
19 - 1D	Small reel, thick tape	T-100
1D - 21	Small reel, thick tape	T-120/DF-240
1E - 1F	Small reel, thin tape	T-140
1F - 23	Small reel, thick tape	T-130
21 - 23	Small reel, thin tape	T-160
21 - 23	Small reel, thin tape	T-168
22 - 24	Small reel, thick tape	DF-300
22 - 24	Small reel, thin tape	T-180/DF-380
22 - 24	Small reel, thin tape	T-210/DF-420
22 - 23	Large reel	T-5
23 - 24	Large reel	T-10
25 - 26	Large reel	T-20
27 - 29	Large reel	T-30
29 - 2B	Large reel	T-40
2D - 2F	Large reel	T-60

NOTE: • *The values of cassette tape type ② in the above table are typical values with representative cassette tapes.*

1.7 SYSCON CIRCUIT

1.7.1 Syscon CPU pin function (IC3001)

PIN NO.	LABEL	IN/OUT	FUNCTION
1	CTL(+)	IN/OUT	CTL(+)SIGNAL
2	SVSS	-	GND
3	CTL(-)	IN/OUT	CTL(-)SIGNAL
4	CTLBIAS	-	CTL BIAS VOLTAGE
5	CTLFB	-	NC
6	CTLAMPOUT	OUT	CTL PULSE OUTPUT
7	CTLSMTIN	IN	CTL PULSE INPUT
8	CFG	IN	CAPSTAN FG PULSE INPUT
9	SVCC	-	SYSTEM POWER
10	AVCC	-	SYSTEM POWER FOR ANALOG CIRCUIT
11	IND(L)	-	NC
12	IND(R)	-	NC
13	NORM/MESEC/S	IN	NORMAL MODE:L/MESECAM MODE:M/NC
14	A.ENV/ND(L)	IN	AUDIO PB FM ENV.INPUT/NON HiFi MODE:L
15	END SENSOR	IN	END SENSOR
16	NC	-	NC
17	START SENSOR	IN	START SENSOR
18	NC	-	NC
19	SCR ID	IN	SCRAMBLE CONTROL INPUT (SCRAMBLE:H)
20	VIDEO ENV	IN	AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL
21	RF AGC	IN	CHANGES IN ATS+IC OUTPUT AS CAUSED BY CHANGES IN RECEIVER SENSITIVITY WHEN THE SAME CHANNEL IS RECEIVED MORE THAN ONCE ARE INPUT.
22	AFC	IN	TUNING LOCK
23	AVSS	-	GND FOR ANALOG CIRCUIT
24	CTL GAIN	OUT	CONTROL AMP OUT FREQUENCY RESPONSE SWITCHING
25	CAP REV(L)	OUT	CAPSTAN MOTOR REVERSE CONTROL (FWD:H/REV:L)
26	LSB	IN	MECHANISM MODE DETECT(B)
27	LSC	IN	MECHANISM MODE DETECT(C)
28	LSA	IN	MECHANISM MODE DETECT(A)
29	RC	IN	REMOTE CONTROL DATA INPUT
30	PROTECT	IN	DETECTION SIGNAL FOR SW POWER SUPPLY
31	PROJECT 50 IN	IN	CONTROL SIGNAL FOR TV LINK
32	POWER DET	IN	DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY
33	PROJECT 50 OUT	OUT	CONTROL SIGNAL FOR TV LINK
34	STB/TEST	OUT	STROBE SIGNAL (FOR FDP DRIVER)
35	LMC1	OUT	LOADING MOTOR DRIVE(1)
36	LMC2	OUT	LOADING MOTOR DRIVE(2)
37	LMC3	OUT	LOADING MOTOR DRIVE(3)
38	P.CTL(H)	OUT	CONTROL SIGNAL FOR SWITCHING POWER SUPPLY
39	P.SAVE(L)	OUT	POWER SAVE:L
40	V_UP(H)	-	NC
41	SIDE BAND GAIN	OUT	VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE
42	NC	-	NC
43	VSS	-	GND
44	SAT_CTL	OUT	REMOTE CONTROL OUTPUT FOR SATELLITE RECEIVER
45	VCC	-	SYSTEM POWER
46	JSA	IN	INPUT FOR JOG SHUTTLE
47	JSB	IN	INPUT FOR JOG SHUTTLE
48	REC SAFETY	IN	REC SAFETY SWITCH DETECT (SW ON:L)
49	I2C DATA	IN/OUT	SERIAL DATA TRANSFER OUTPUT
50	I2C CLK	OUT	SERIAL DATA TRANSFER CLOCK
51	S.DATA TOSYS	IN	SERIAL DATA TRANSFER OUTPUT TO THE FDP DRIVER
52	S.DATA FRSYS	OUT	SERIAL DATA TRANSFER OUTPUT TO THE ON-SCREEN IC
53	S.CLK	OUT	SERIAL DATA TRANSMISSION CLOCK FROM THE FDP DRIVER TO THE ON-SCREEN IC
54	SP FG	IN	DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN
55	SW2	OUT	“TUNER SYSTEM ””L”” MODE:L”
56	LOCK(L)	IN	TUNING PLL LOCK DETECT:L

PIN NO.	LABEL	IN/OUT	FUNCTION
57	TU CE	OUT	CHIP ENABLE OF THE TUNER UNIT
58	SW1	OUT	"TUNER SYSTEM ""L"" MODE:H"
59	TU FG	IN	DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN
60	TU CLK	OUT	CLOCK FOR DATA TRANSFER TO THE TUNER UNIT
61	TU DATA	OUT	TUNING DATA
62	FWE	-	NC
63	NMI(L)	-	NC
64	X2	-	TIMER CLOCK (32.768 kHz)
65	X1	-	TIMER CLOCK (32.768 kHz)
66	RES(L)	-	RESET TERMINAL (RESET ON:L)
67	OSC1(IN)	-	MAIN SYSTEM CLOCK (10MHz)
68	VSS	-	GND
69	OSC2(OUT)	-	MAIN SYSTEM CLOCK (10MHz)
70	VCC	-	SYSTEM POWER
71	MODE	-	NC
72	TU A MUTE(H)	OUT	TUNER AUDIO MUTE CONTROL (MUTE:H)
73	TU V MUTE(H)	OUT	TUNER VIDEO CONTROL (MUTE:H)
74	MESECAM(H)	OUT	MESECAM:H
75	I2C CLK2	OUT	SERIAL DATA TRANSFER CLOCK FOR MEMORY IC
76	I2C DATA2	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR MEMORY IC
77	SYNC DET(H)	IN	DETECTION OF VIDEO SYNC SIGNAL (DETECTED:H)
78	OSD CS	OUT	CHIP SELECT FOR THE ON-SCREEN IC
79	EE(L)	OUT	EE/PB CONTROL (EE MODE:L)
80	R.PAUSE	-	NC
81	FMA_SHORT(H)2	-	NC
82	VCC	-	SYSTEM POWER
83	FMA_SHORT(H)1	-	NC
84	VSS	-	GND
85	SP_SHORT(H)	OUT	MODE SELECT
86	LP_SHORT(H)	OUT	MODE SELECT
87	H.REC ST(H)	OUT	HiFi AUDIO SOUND RECORDING START
88	A.MUTE(H)	OUT	AUDIO MUTE CONTROL (MUTE:H)
89	PAL_PB(H)	OUT	PAL MODE:H
90	NC	-	NC
91	NC	-	NC
92	NC	-	NC
93	P.MUTE(L)	OUT	PICTURE MUTE CONTROL (MUTE:L)
94	SECAM(H)	-	NC
95	SECAM_DET	-	NC
96	NC	-	NC
97	NC	-	NC
98	C.SYNC	IN	COMPOSITE SYNC
99	A.FF	OUT	AUDIO FF OUTPUT
100	V.FF	OUT	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC
101	CAPPWM	OUT	CAPSTAN MOTOR CONTROL
102	DRUMPWM	OUT	DRUM MOTOR CONTROL
103	NC	-	NC
104	N.REC ST(H)	OUT	NORMAL AUDIO SOUND RECORDING START
105	N.REC(H)	OUT	NORMAL AUDIO REC MODE CONTROL (REC:H)
106	NC	-	NC
107	DPG	IN	DRUM PICKUP PULSE INPUT (SWITCHING PULSE)
108	DFG	IN	DRUM FG PULSE INPUT
109	VCC	-	SYSTEM POWER
110	V.PULSE	OUT	V.PULSE ADDITION TIMING CONTROL
111	VSS	-	GND
112	CTLREF	-	CTL REFERENCE VOLTAGE

SECTION 2
MECHANISM ADJUSTMENT

2.1 BEFORE STARTING REPAIR AND ADJUSTMENT

2.1.1 Precautions

(1) Unplug the power cable of the main unit before using your soldering iron.
(2) Take care not to cause any damage to the conductor wires when plugging and unplugging the connectors.
(3) Do not randomly handle the parts without identifying where the trouble is.
(4) Exercise enough care not to damage the lugs, etc. during the repair work.
(5) When installing the front panel assembly, be sure to hook the lug on the back side of the cassette door to the door opener of the cassette holder. If this operation is neglected it will not be possible to remove the cassette when ejecting because the housing door cannot be opened.

2.1.2 Checking for Proper Mechanical Operations

Enter the mechanism service mode when you want to operate the mechanism when no cassette is loaded. (See 1.5 MECHANISM SERVICE MODE.)

2.1.3 Manually Removing the Cassette Tape

1. In case of electrical failures

If you cannot remove the cassette tape which is loaded because of any electrical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, bracket and front panel assembly. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(2) Unload the cassette by manually turning the loading motor of the mechanism assembly toward the front. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.2-1-1.)
(3) Bring the pole base assembly (supply or take-up side) to a pause when it reaches the position where it is hidden behind the cassette tape.
(4) Move the top guide toward the drum while holding down the lug Ⓐ of the bracket retaining the top guide. Likewise hold part Ⓑ down and remove the top guide. Section Ⓒ of the top guide is then brought under the cassette lid. Then remove the top guide by pressing the whole cassette tape down. (See Fig.2-1-2.)
(5) Remove the cassette tape by holding both the slackened tape and the cassette lid.
(6) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

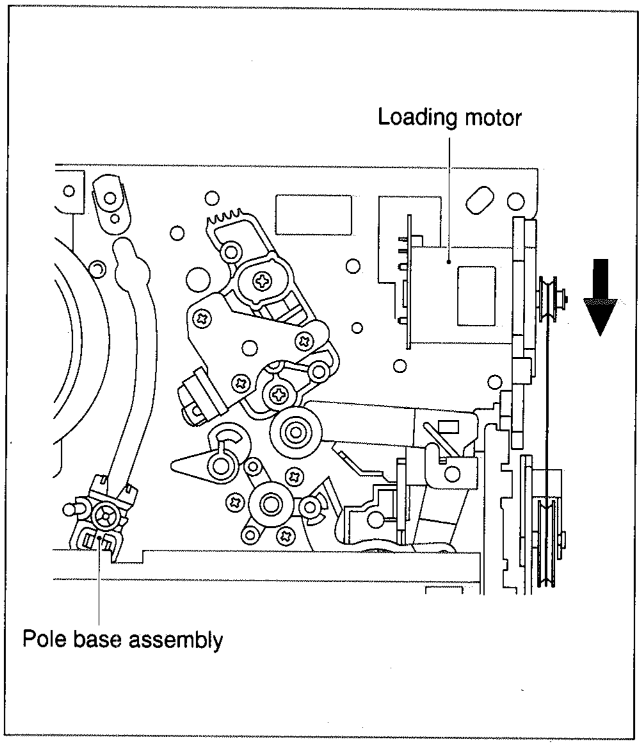


Fig. 2-1-1

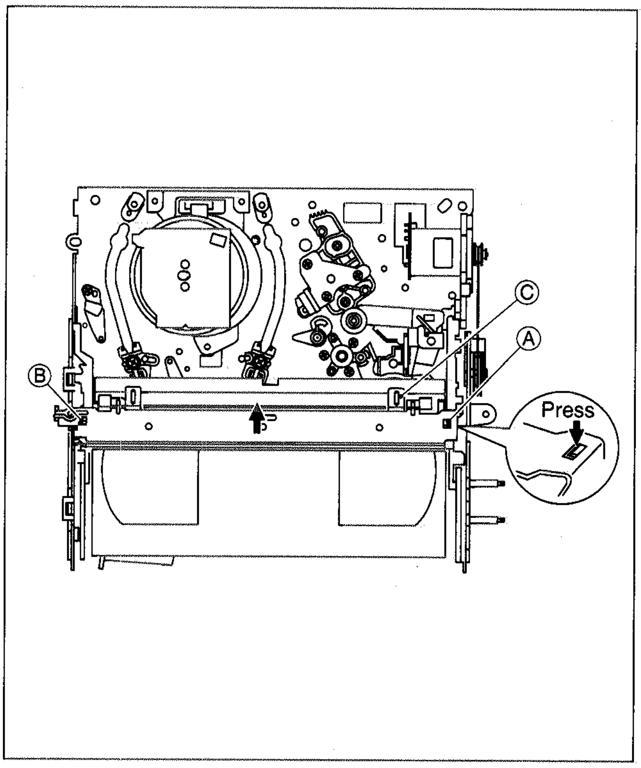


Fig. 2-1-2

2. In case of mechanical failure

If you cannot remove the cassette tape which is loaded because of any mechanical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, front panel assembly and others so that the mechanism assembly is visible. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)

(2) While keeping the tension arm assembly of the mechanism assembly free from tension, pull the tape on the pole base assembly (supply or take-up side) out of the guide roller. (See Fig.2-1-3.)

(3) Take the spring of the pinch roller arm assembly off the hook of the press lever assembly, and detach it from the tape. (See Fig.2-1-4.)

(4) In the same way as in the electrical failure instructions in 2.1.3 (4), remove the top guide.

(5) Raise the cassette tape cover. By keeping it in that position, draw out the cassette tape case from the cassette holder and take out the tape.

(6) By hanging the pinch roller arm assembly spring back on the hook, take up the slack of the tape into the cassette.

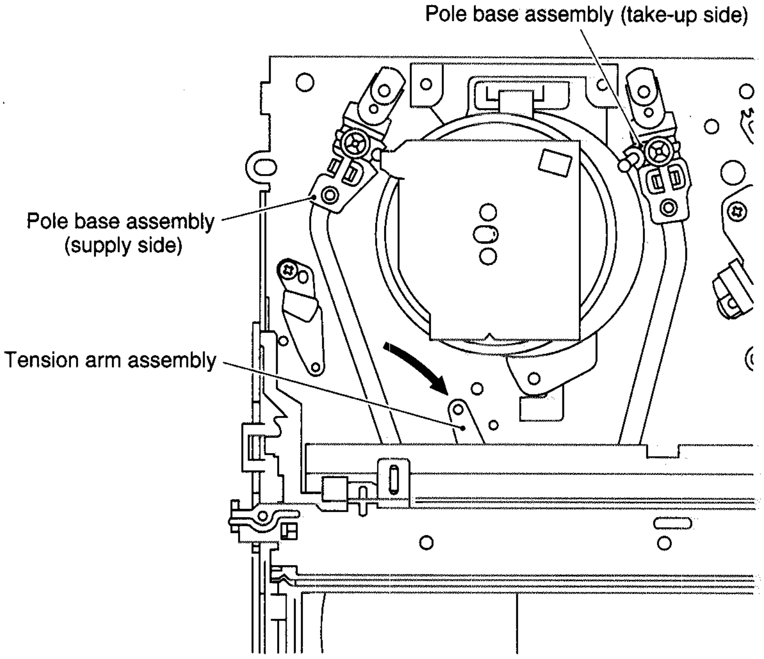

Pole base assembly (take-up side)
Pole base assembly (supply side)
Tension arm assembly

Fig. 2-1-3

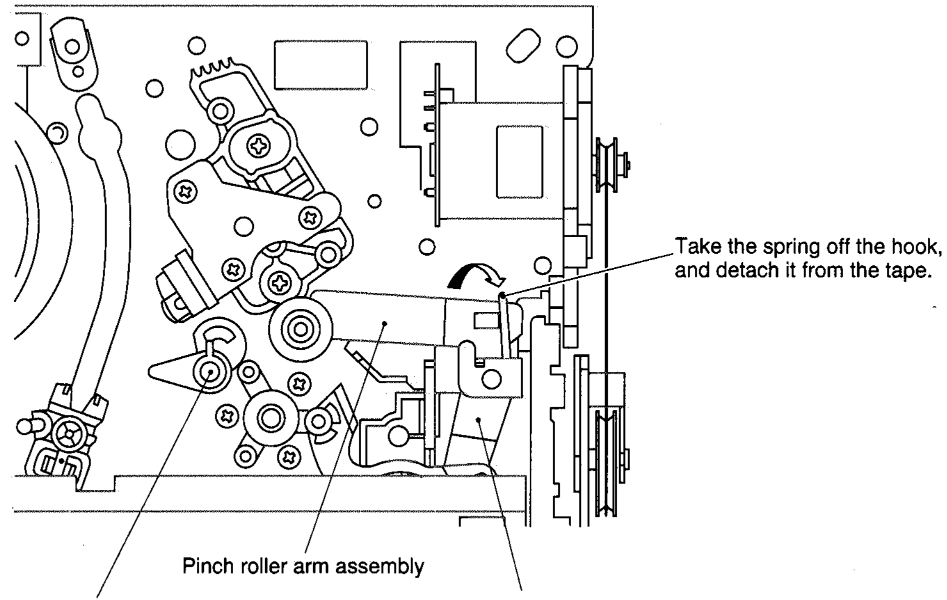

Take the spring off the hook, and detach it from the tape.
Pinch roller arm assembly
Guide pole guard
Press lever assembly

Fig. 2-1-4

2.1.4 Jigs and Tools Required for Adjustment

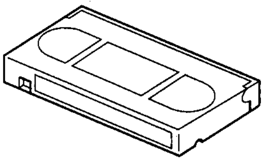
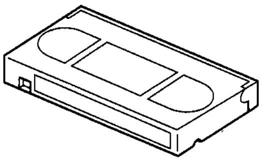
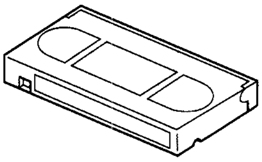
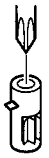
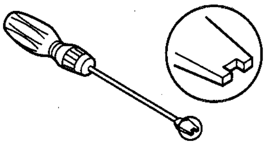
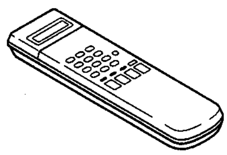
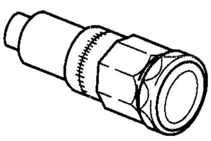
Alignment tape (SP) MHPE	Alignment tape (LP) MHPE-L	Back tension cassette gauge PUJ48076-2	A/C head positioning tool PTU94010
			
Roller driver PTU94002	Jig RCU PTU94023B	Torque gauge PUJ48075-2	
			

Table 2-1-1 Jigs and tools required for adjustment

2.1.5 Maintenance and Inspection

1. Location of major mechanical parts

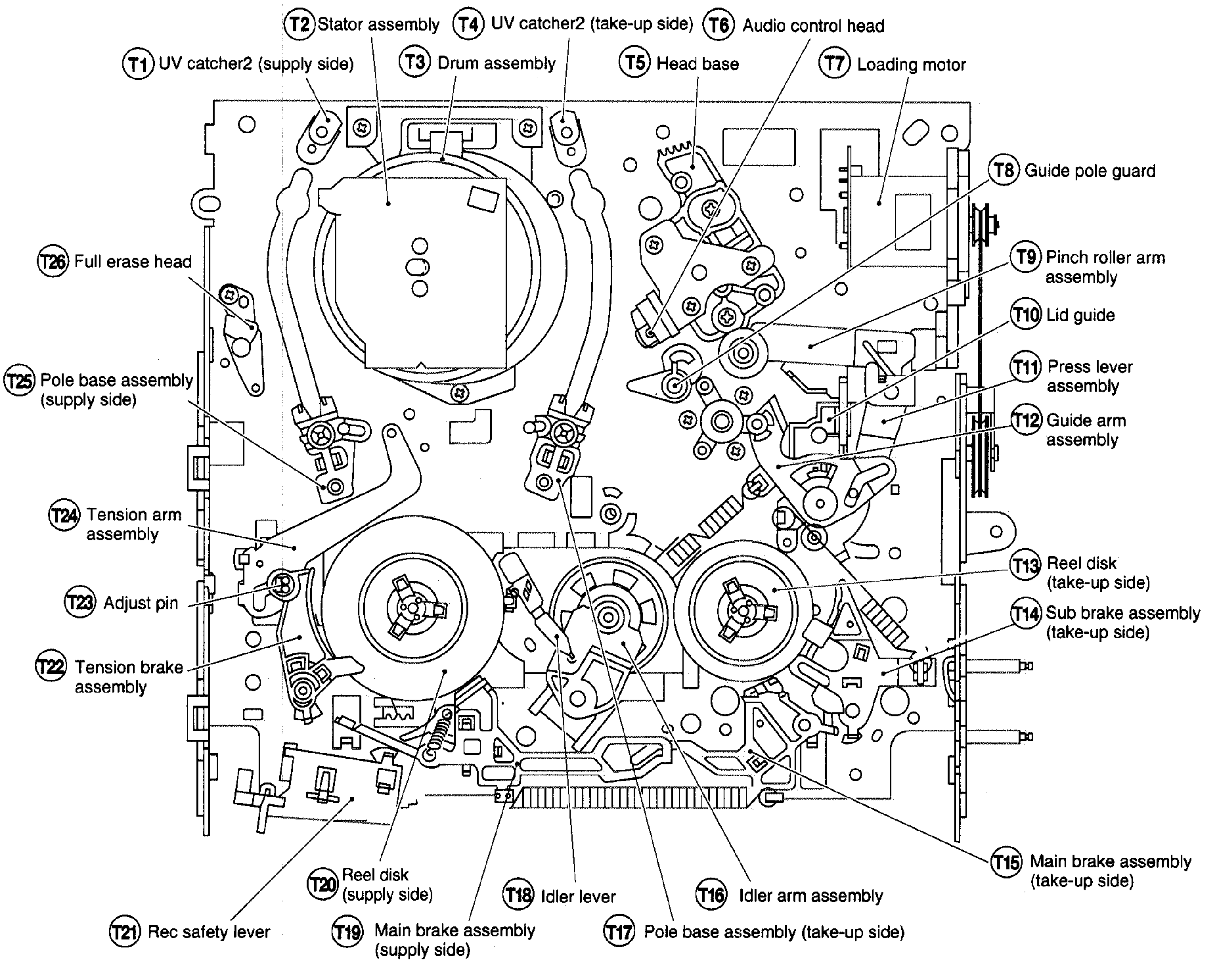

T2 Stator assembly
T4 UV catcher2 (take-up side)
T6 Audio control head
T1 UV catcher2 (supply side)
T3 Drum assembly
T5 Head base
T7 Loading motor
T8 Guide pole guard
T26 Full erase head
T9 Pinch roller arm assembly
T10 Lid guide
T25 Pole base assembly (supply side)
T11 Press lever assembly
T12 Guide arm assembly
T24 Tension arm assembly
T13 Reel disk (take-up side)
T23 Adjust pin
T14 Sub brake assembly (take-up side)
T22 Tension brake assembly
T15 Main brake assembly (take-up side)
T20 Reel disk (supply side)
T18 Idler lever
T16 Idler arm assembly
T21 Rec safety lever
T19 Main brake assembly (supply side)
T17 Pole base assembly (take-up side)

Fig. 2-1-5 Mechanism assembly top side

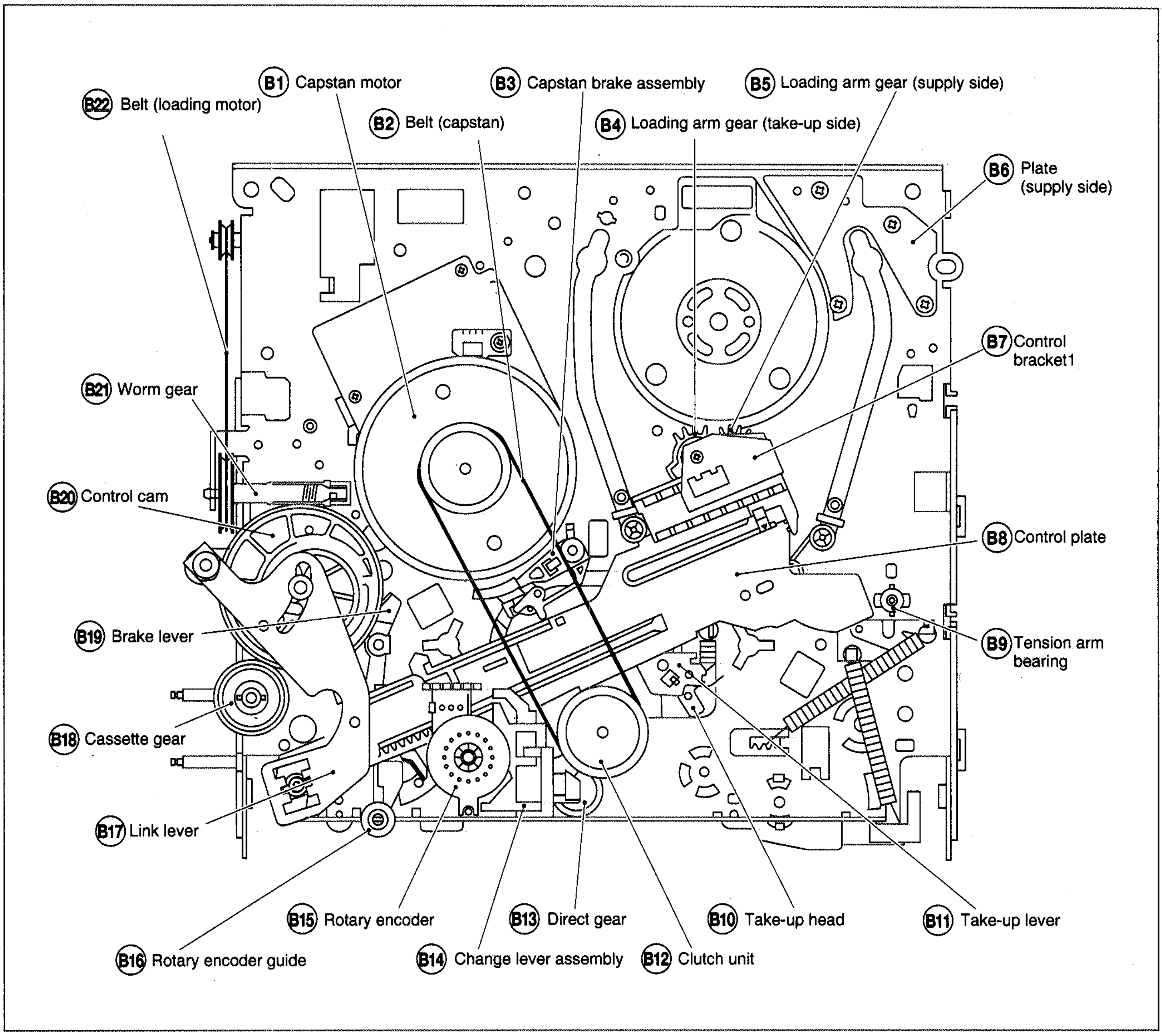

B1 Capstan motor
B22 Belt (loading motor)
B3 Capstan brake assembly
B5 Loading arm gear (supply side)
B2 Belt (capstan)
B4 Loading arm gear (take-up side)
B6 Plate (supply side)
B7 Control bracket1
B21 Worm gear
B20 Control cam
B8 Control plate
B19 Brake lever
B9 Tension arm bearing
B18 Cassette gear
B17 Link lever
B15 Rotary encoder
B13 Direct gear
B10 Take-up head
B11 Take-up lever
B16 Rotary encoder guide
B14 Change lever assembly
B12 Clutch unit

Fig. 2-1-6 Mechanism assembly bottom side

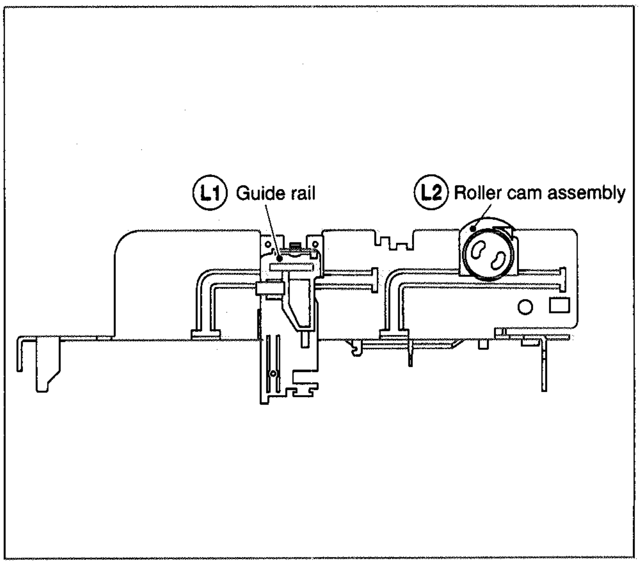

L1 Guide rail
L2 Roller cam assembly

Fig. 2-1-7 Mechanism assembly left side

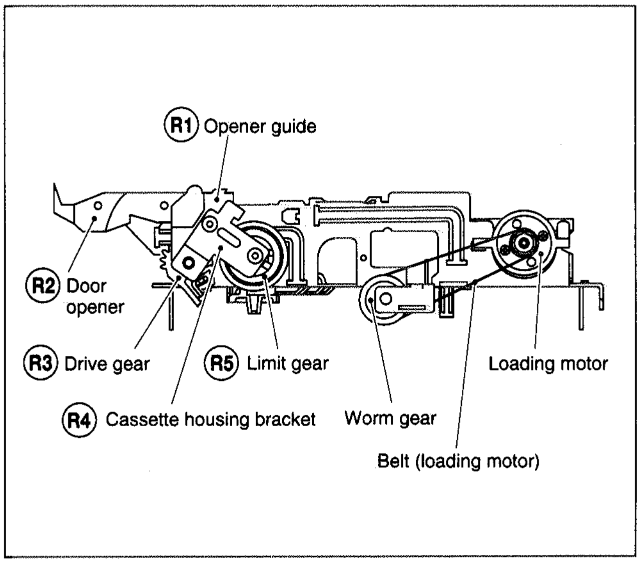

R1 Opener guide
R2 Door opener
R3 Drive gear
R5 Limit gear
Loading motor
R4 Cassette housing bracket
Worm gear
Belt (loading motor)

Fig. 2-1-8 Mechanism assembly right side

Note: *This table shows the order in which parts are removed for replacement. To replace parts, remove them in the order of 1 to 18 as shown in the table. To install them, reverse the removal sequence.*
The circled numbers (symbols and numbers) preceding the individual part names represent the numbers in the "Location of major mechanical parts" table. Also, the "T", "B", and "T/B" on the right of each part name shows that the particular part is removed from the front, from the back, and from both sides of the mechanism, respectively.

	Symbols and numbers			(L1)	(L2)	(R4)	(R1)	–	–	(R3)	–	(T9)	(T12)	(T11)	(T1)(T4)	(B15)	(B12)	(B14)	(B13)	(B17)	(B21)	(B7)	(B8)	(B5)	(B4)	(B11)	(T14)	(T15)	(T13)	(T22)	(T24)	(T18)	(B19)
Symbols and numbers	Removal parts (Reference items) Replacement parts	Front (T)/Back (B) of mechanism	Number of removal steps	Guide rail	Roller cam assembly	Cassette housing bracket	Opener guide	Relay gear	Cassette holder assembly	Drive gear	Drive arm	Pinch roller arm assembly	Guide arm assembly	Press lever assembly	UV catcher2	Rotary encoder	Clutch unit	Change lever assembly	Direct gear	Link lever	Worm gear	Control bracket1	Control plate	Loading arm gear (supply side)	Loading arm gear (take-up side)	Take-up lever	Sub brake assembly (take-up side)	Main brake assembly (take-up side)	Reel disk (take-up side)	Tension brake assembly	Tension arm assembly	Idler lever	Brake lever
(L1)	2.2.3 Guide rail	T	1																														
(L2)	2.2.3 Roller cam assembly	T	1																														
(R4)	2.2.3 Cassette housing bracket	T	1																														
(R1)	2.2.3 Opener guide	T	2			1																											
(R2)	2.2.3 Door opener	T	3			1	2																										
–	2.2.3 Relay gear	T	3			1	2																										
(R5)	2.2.3 Limit gear	T	3			1	2																										
–	2.2.3 Cassette holder assembly	T	6	1	2	3	4	5																									
(R3)	2.2.3 Drive gear	T	4			1	2	3																									
–	2.2.3 Drive arm	T	8	1	2	3	4	5	6	7																							
(T9)	2.2.4 Pinch roller arm assembly	T	1																														
(T12)	2.2.5 Guide arm assembly	T	1																														
(T11)	2.2.5 Press lever assembly	T	3									1	2																				
(T6)	2.2.6 Audio control head	T	1																														
(T7)	2.2.7 Loading motor	T	1																														
(B1)	2.2.8 Capstan motor	T/B	1																														
(T1),(T4)	2.2.9 UV catcher2	T	1																														
(T17)	2.2.9 Pole base assembly (take-up side)	T/B	2												1																		
(T25)	2.2.9 Pole base assembly (supply side)	T/B	2												1																		
(B15)	2.2.10 Rotary encoder	B	1																														
(B12)	2.2.11 Clutch unit	B	1																														
(B14)	2.2.12 Change lever assembly	B	3													1	2																
(B13)	2.2.12 Direct gear	B	4													1	2	3															
–	2.2.12 Clutch gear1	B	5													1	2	3	4														
(B17)	2.2.13 Link lever	B	1																														
(B18)	2.2.14 Cassette gear	B	2																	1													
(B20)	2.2.14 Control cam	B	2																	1													
(B21)	2.2.14 Worm gear	B	1																														
(T10)	- Lid guide	T/B	5									1	2	3							4												
(B7)	2.2.15 Control bracket1	B	1																														
(B8)	2.2.15 Control plate	B	6													1	2	3		4		5											
(B5)	2.2.16 Loading arm gear (supply side)	B	7													1	2	3		4		5	6										
(B4)	2.2.16 Loading arm gear (take-up side)	B	8													1	2	3		4		5	6	7									
–	2.2.16 Loading arm gear shaft	B	9													1	2	3		4		5	6	7	8								
(B11)	2.2.17 Take-up lever	T/B	7													1	2	3		4		5	6										
(B10)	2.2.17 Take-up head	T/B	8													1	2	3		4		5	6			7							
–	2.2.17 Control plate guide	T/B	8													1	2	3		4		5	6			7							
(B3)	2.2.18 Capstan brake assembly	T/B	7													1	2	3		4		5	6										
(T14)	2.2.19 Sub brake assembly(take-up side)	T/B	15	1	2	3	4	5	6	7	8					9	10	11		12		13	14										
(T15)	2.2.20 Main brake assembly(take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11		12		13	14				15						
(T19)	2.2.20 Main brake assembly(supply side)	T/B	9	1	2	3	4	5	6	7	8																						
(T13)	2.2.20 Reel disk (take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11		12		13	14				15						
(T22)	2.2.21 Tension brake assembly	T/B	9	1	2	3	4	5	6	7	8																						
(T20)	2.2.21 Reel disk (supply side)	T/B	10	1	2	3	4	5	6	7	8																			9			
(T24)	2.2.21 Tension arm assembly	T/B	10	1	2	3	4	5	6	7	8																			9			
(B9)	2.2.21 Tension arm bearing	T/B	10	1	2	3	4	5	6	7	8																			9			
(T18)	2.2.22 Idler lever	T/B	17	1	2	3	4	5	6	7	8					9	10	11		12		13	14							15	16		
(T16)	2.2.22 Idler arm assembly	T/B	18	1	2	3	4	5	6	7	8					9	10	11		12		13	14							15	16	17	
(B19)	- Brake lever	T/B	18	1	2	3	4	5	6	7	8					9	10	11		12		13	14				15	16	17				
(B16)	- Rotary encoder guide	T/B	19	1	2	3	4	5	6	7	8					9	10	11		12		13	14				15	16	17				18

2. Cleaning

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.
When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth or Kimu-wipe with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

Note: ***Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.***

(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.
(3) After cleaning, make sure that the cleaned parts are completely dry before using the video tape.

3. Lubrication

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

(1) See the mechanism assembly and disassembly diagrams (M4) for the lubricating or greasing spots. See Table 2-1-2 for the types of oil or grease to be used.

Type	Name	Serial No.	Symbols on the disassembly diagrams
Grease	Maltemp SH-P	KYODO-SH-P	AA
Oil	Cosmohydro HV56	COSMO-HV56	BB

Table 2-1-2 Grease and oil used for the unit

4. Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Capstan motor (Shaft)	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Capstan brake assembly		○
	Main brake assembly		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Clutch unit		○
	Worm gear		○
	Control plate		○
Other	Brush	★○	★○
	Tension brake assembly	○	○
	Rotary encoder		○

★: Cleaning
○: Inspection or Replacement if necessary

Table 2-1-3

2.2 REPLACEMENT OF MAJOR PARTS

2.2.1 Before Starting Disassembling (Phase matching between mechanical parts)

The mechanism of this unit is closely linked with the rotary encoder and system controller circuits.
Since the system controller detects the status of mechanical operation in response to phases of the rotary encoder (internal switch positions), the mechanism may not operate properly unless such parts as the rotary encoder, control plate, loading arm gear, control cam, cassette gear, limit gear, relay gear and drive gear are installed in their correct positions.
Especially, this model is not provided with any cassette housing assembly, so that cassette loading and unloading must be accomplished by operation of the cassette holder assembly. The latter is in turn driven by such parts as the drive gear, relay gear and limit gear. Exercise enough care, therefore, to have the phases of all this gear matching one another.
(For information on phase matching of the mechanism, see the instructions on how to install individual parts.)

This unit is provided with a mechanism assembly mode. It is therefore necessary to enter this mode for assembling and disassembling procedures.
This mode is usually not in use, manually set it when it is required.

2.2.2 How to Set the Mechanism Assembling Mode

Remove the mechanism assembly and place it bottom side up. (See SECTION 1 DISASSEMBLY.) Turn the worm gear toward the front so that the guide hole of the control cam is brought into alignment with the hole at the mechanism assembly chassis. This position renders the mechanism assembling mode operational. Make sure that the control plate is located in alignment with the mark E. (See Fig.2-2-1.)

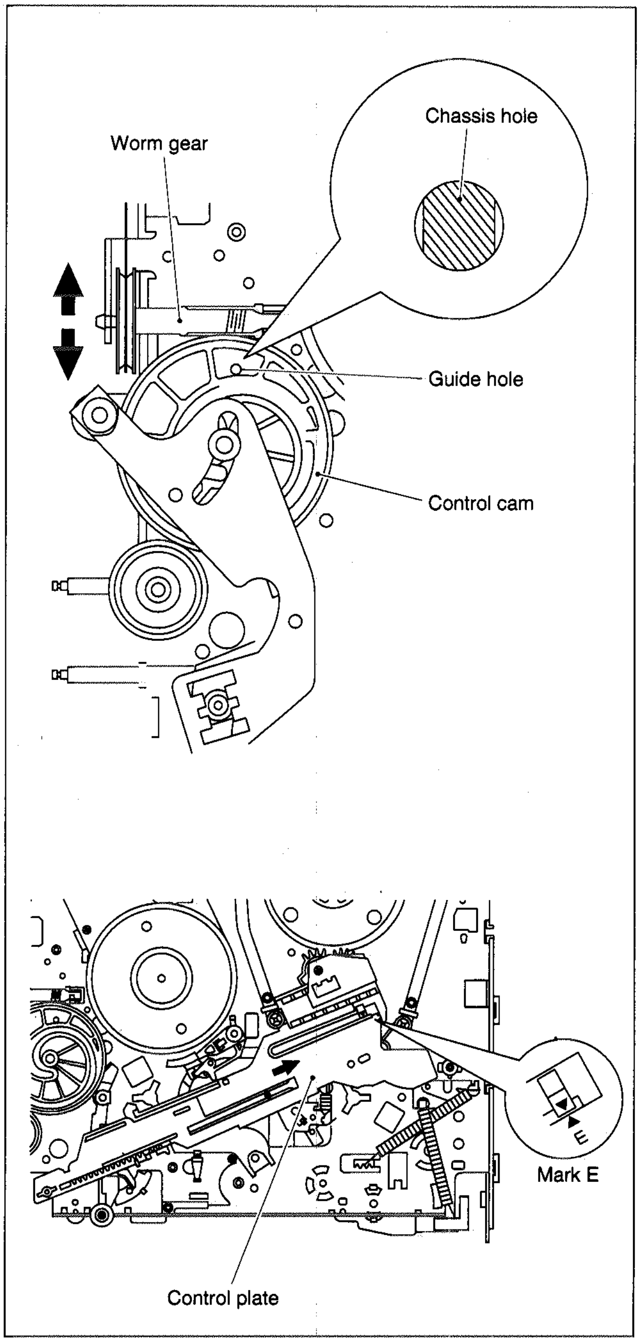

Worm gear
Chassis hole
Guide hole
Control cam
E
Mark E
Control plate

Fig. 2-2-1

2.2.3 Cassette Holder Assembly

1. How to remove

(1) Remove the guide rail and roller cam assembly. (See Fig.2-2-2.)
(3 lugs on the guide rail and one lug on the roller cam assembly)

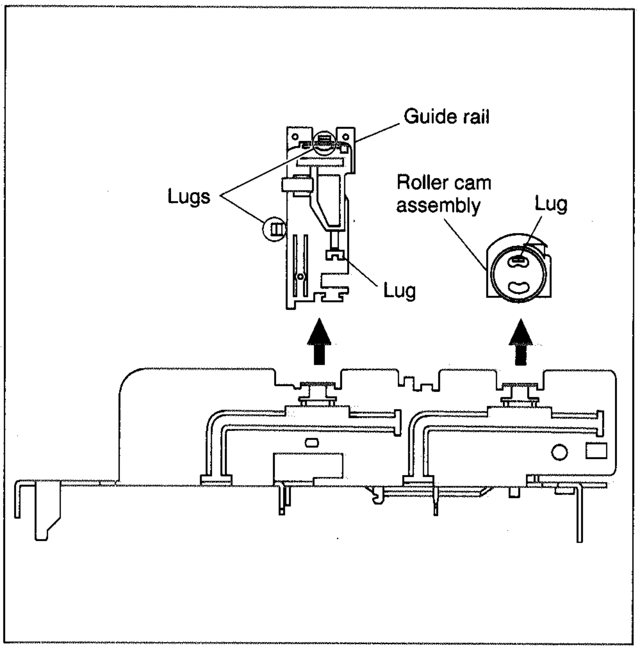

Guide rail
Lugs
Roller cam assembly
Lug
Lug

Fig. 2-2-2

(2) Remove the two slit washers and remove the cassette housing bracket. (See Fig.2-2-3.)
(3) Remove the opener guide, spring(A), door opener, relay gear and limit gear. (See Fig.2-2-3.)

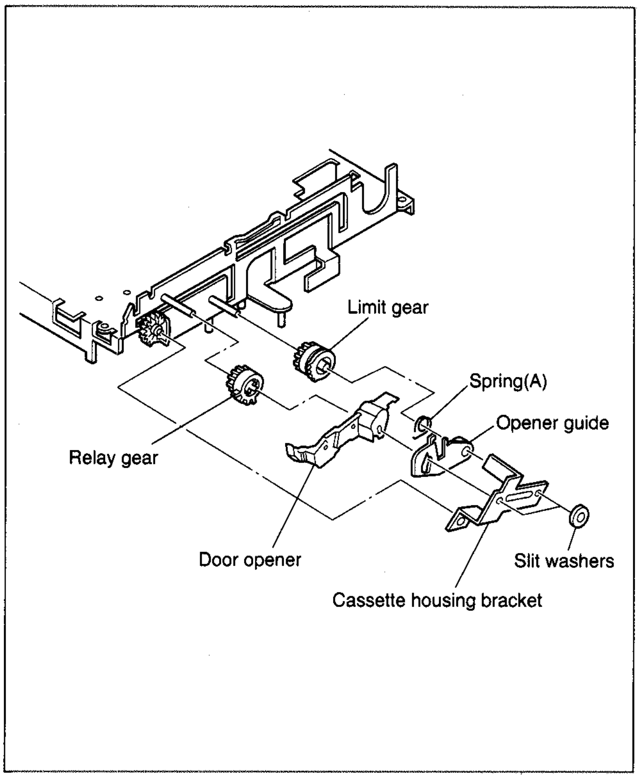

Limit gear
Spring(A)
Opener guide
Relay gear
Door opener
Slit washers
Cassette housing bracket

Fig. 2-2-3

(4) While swinging the lock levers (R) and (L) of the cassette holder assembly toward the front, slide the cassette holder assembly until its legs come to where the guide rail and the roller cam assembly have been removed (so that the drive arm is upright). (See Fig.2-2-4.)

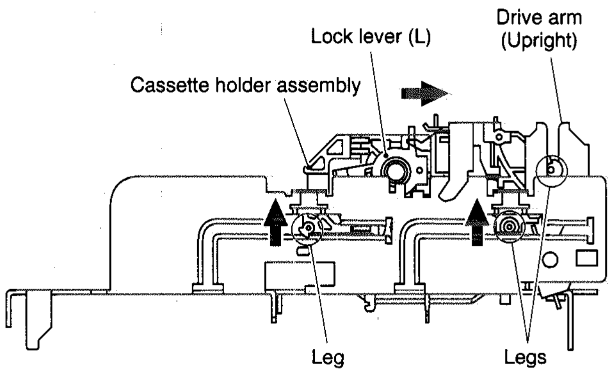

Drive arm (Upright)
Lock lever (L)
Cassette holder assembly
Leg
Legs

Fig. 2-2-4

(5) While holding the left side of the cassette holder, lift the cassette holder assembly so that the three legs on the left side are all released. Then pull the legs Ⓐ and Ⓑ on the right side out of the rail and also pull up the leg Ⓒ. (See Fig.2-2-5 and Fig.2-2-6.)

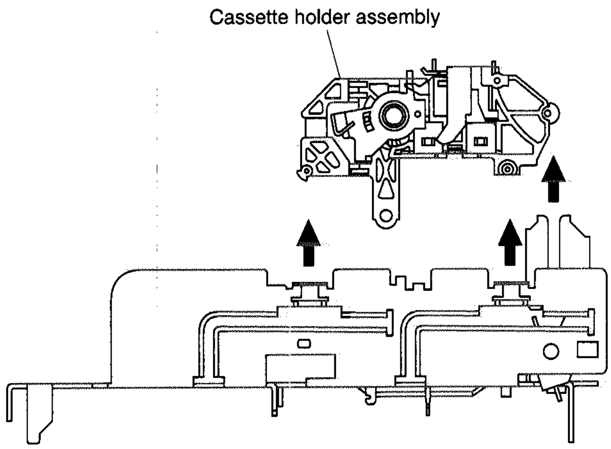

Cassette holder assembly

Fig. 2-2-5

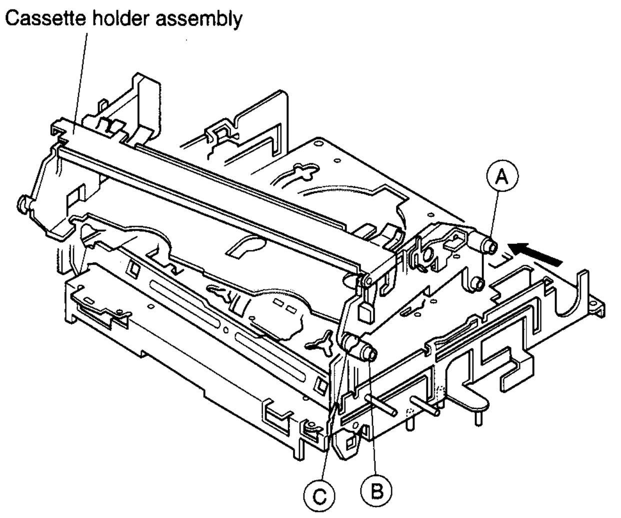

Cassette holder assembly
Ⓐ
Ⓒ
Ⓑ

Fig. 2-2-6

(6) Draw out the drive gear, and remove the drive arm.

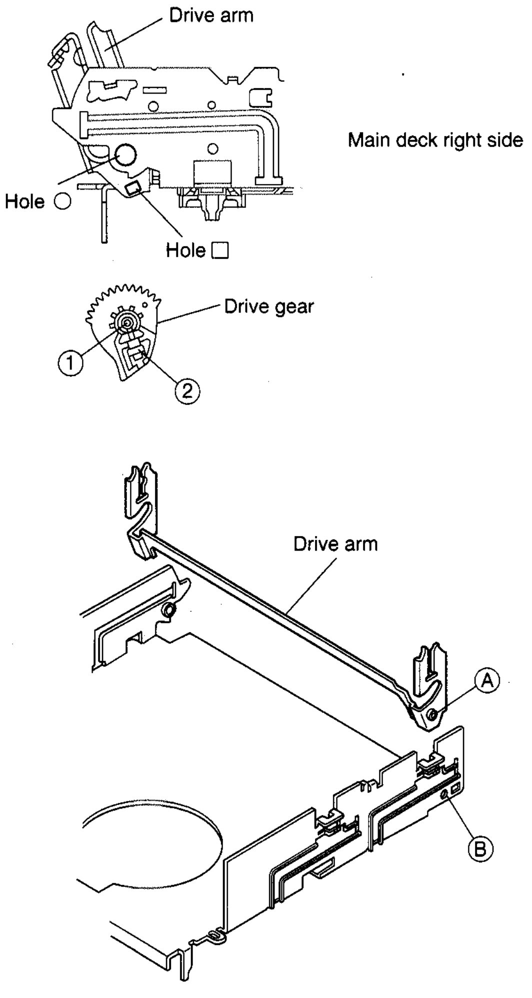

Drive arm
Main deck right side
Hole ○
Hole □
Drive gear
①
②
Drive arm
Ⓐ
Ⓑ

Fig. 2-2-7

2. How to install (Phase matching)

(1) Insert the section Ⓐ of the drive arm into the section Ⓑ of the main deck.

(2) Insert the section ① of the drive gear into the round hole, and the section ② into the square hole on the drive arm. (See Fig.2-2-7.)

(3) Hold the drive arm upright and fit the leg Ⓒ on the right side of the cassette holder assembly into the groove. (See Fig.2-2-8.)

(4) While swinging the lock lever (R) of the cassette holder assembly toward the front, put the legs Ⓐ and Ⓑ into the rail. (See Fig.2-2-8.)

(5) Drop the three legs on the left side of the cassette holder assembly into the groove at one time. (See Fig.2-2-9.)

(6) Slide the whole cassette holder assembly toward the front to bring it to the eject end position.

(7) Install the limit gear so that the notch on the outer circumference of the limit gear is brought into alignment with the guide hole on the main deck. (See Fig.2-2-10.)

(8) Install so that the notch on the periphery of the relay gear is aligned with the notch of the main deck and that hole A of the relay gear is aligned with the hole A of the limit gear and that hole B of the relay gear is aligned with the hole B of the drive gear. (See Fig.2-2-10.)

(9) Install the door opener, opener guide, spring(A) and cassette housing bracket and fasten the two slit washers.

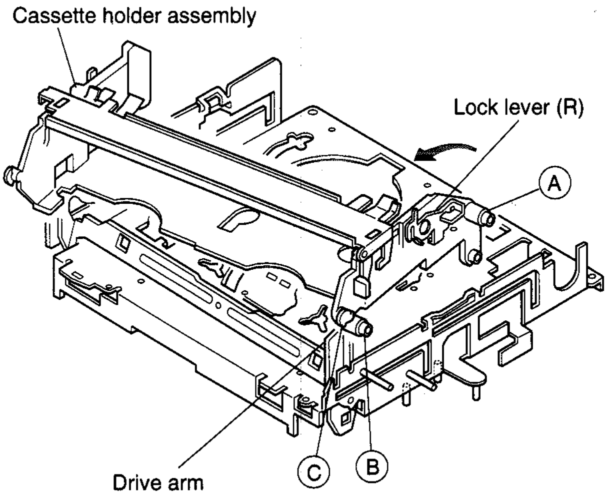

Cassette holder assembly
Lock lever (R)
Ⓐ
Drive arm
Ⓒ
Ⓑ

Fig. 2-2-8

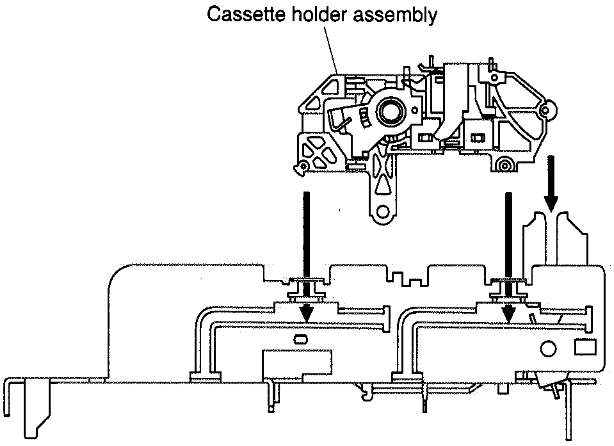

Cassette holder assembly

Fig. 2-2-9

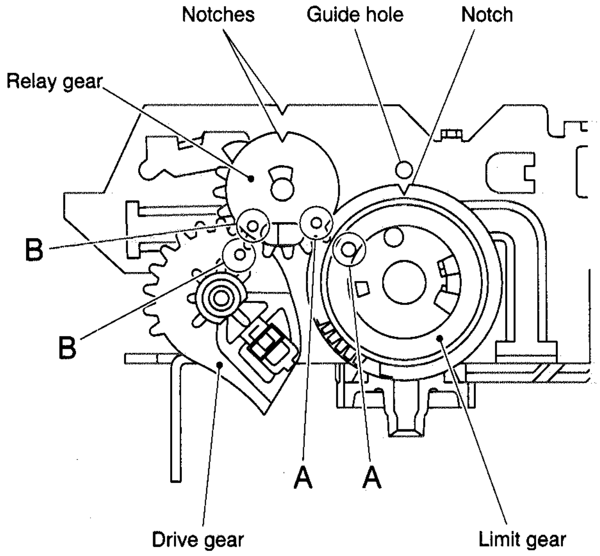

Notches
Guide hole
Notch
Relay gear
B
B
A
A
Drive gear
Limit gear

Fig. 2-2-10

2.2.4 Pinch Roller Arm Assembly

1. How to remove

(1) Remove the spring from the hook of the press lever assembly.
(2) Remove the slit washer and remove the pinch roller seat 2. (See Fig.2-2-11.)
(3) Remove the pinch roller arm assembly by pulling it up.

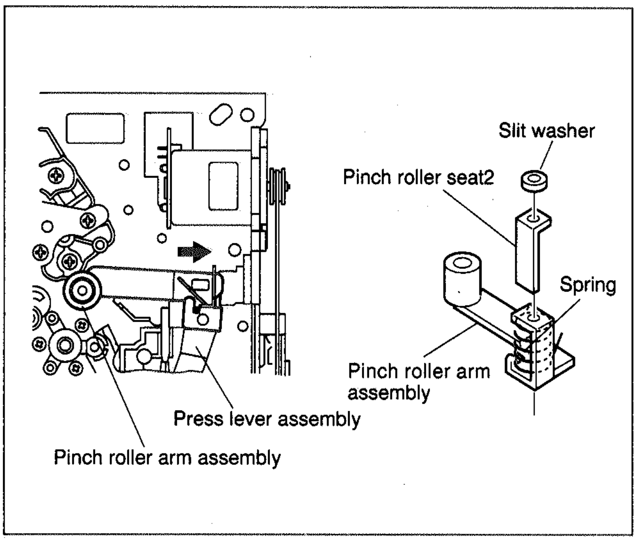

Slit washer
Pinch roller seat2
Spring
Pinch roller arm assembly
Press lever assembly
Pinch roller arm assembly

Fig. 2-2-11

2.2.5 Guide Arm Assembly and Press Lever Assembly

1. How to remove

(1) Remove the spring and expand the lug of the lid guide in the arrow-indicated direction. Then remove the guide arm assembly by pulling it up.
(2) Remove the press lever assembly by pulling it up. (See Fig.2-2-12.)

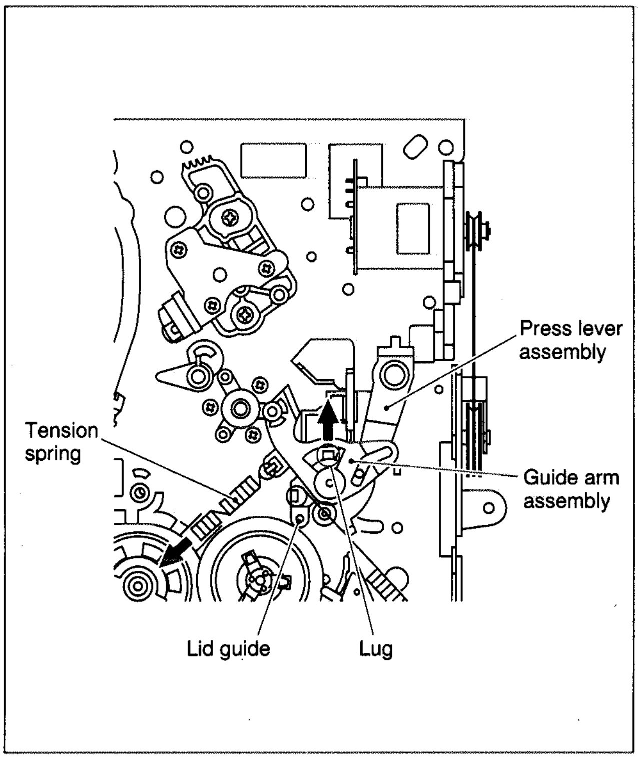

Press lever assembly
Tension spring
Guide arm assembly
Lid guide
Lug

Fig. 2-2-12

2.2.6 Audio Control Head

1. How to remove

(1) Remove the two screws (A) and remove the audio control head together with the head base.

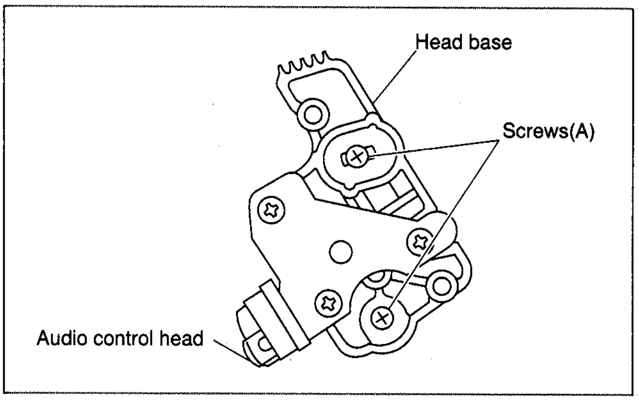

Head base
Screws(A)
Audio control head

Fig. 2-2-13

(2) When replacing only the audio control head, remove the three screws (B) while controlling the compression spring.

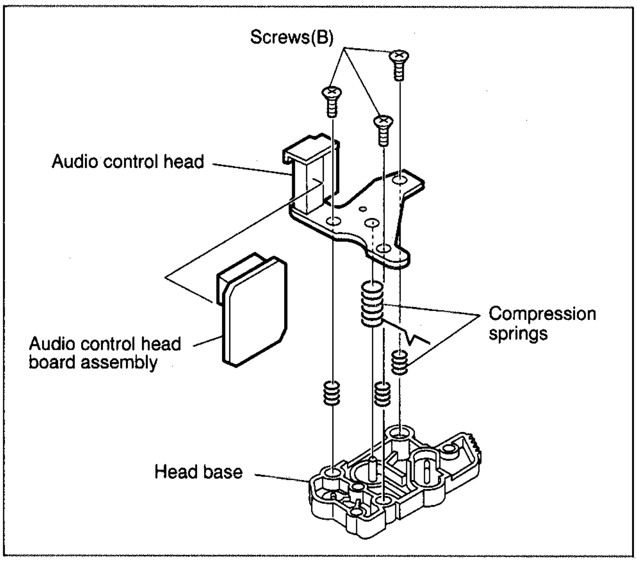

Screws(B)
Audio control head
Compression springs
Audio control head board assembly
Head base

Fig. 2-2-14

2. How to install

(1) To make the post-installation adjustment easier, set the temporary level as indicated in Fig.2-2-15. Also make sure that the screw centre is brought into alignment with the centre position of the slot.

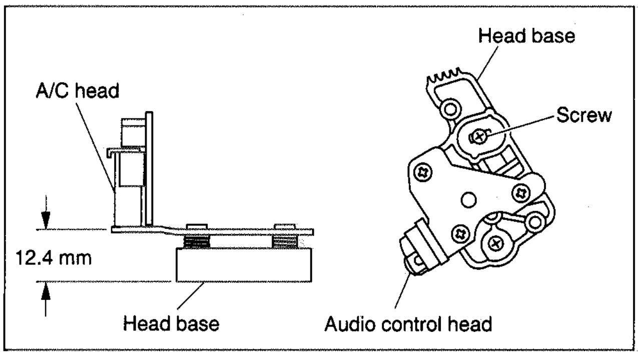

Head base
A/C head
Screw
12.4 mm
Head base
Audio control head

Fig. 2-2-15

2.2.7 Loading Motor

1. How to remove

(1) Remove the belt wound around the worm gear.

(2) Open the two lugs of the motor guide and remove the loading motor, loading motor board assembly and motor guide altogether by pulling them up.

(3) When replacing the loading motor board assembly, take care with the orientation of the loading motor. (Install so that the loading motor label faces upward.)

(4) When the motor pulley has been replaced, choose the fitting dimension as indicated in Fig.2-2-16.

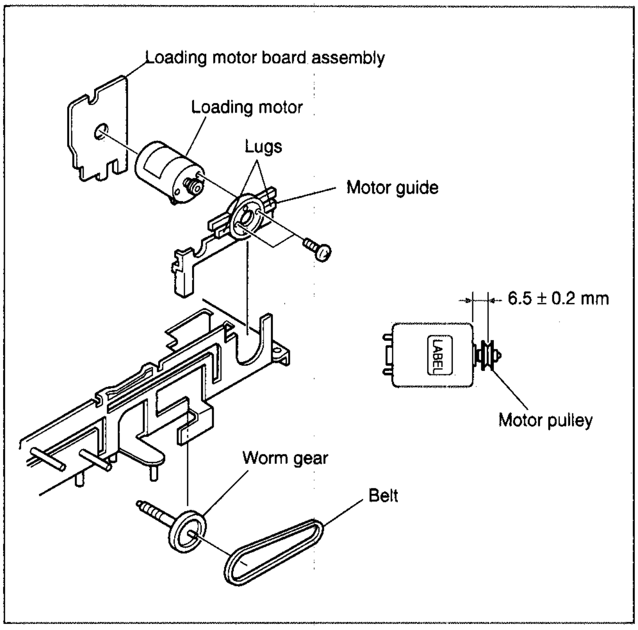


Fig. 2-2-16

2.2.8 Capstan Motor

1. How to remove

(1) Remove the belt (capstan) on the mechanism assembly back side.

(2) Remove the three screws (A) and remove the capstan motor.

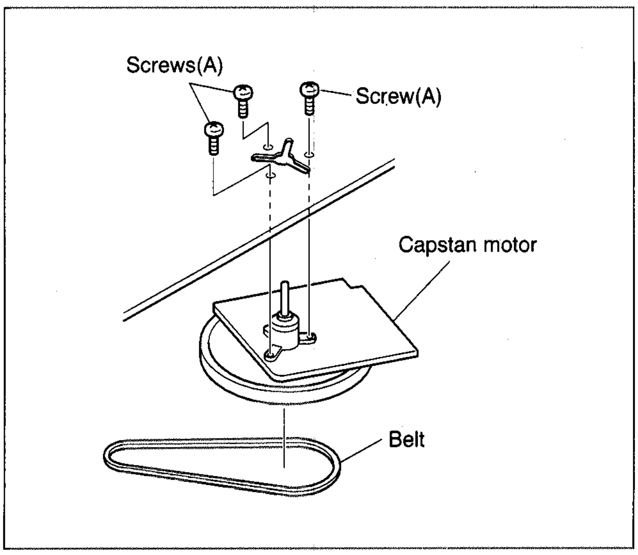


Fig. 2-2-17

2. How to install (Centering the mounting position)

When the capstan motor has once been removed and then reinstalled out of the initial correct position in the rotational direction, the capstan motor current may be unstable during operation in high or low temperatures. This may result in greater Wow & Flutter and occasionally in power breakdown because of current over - load. Install the capstan motor while following the procedure given below.

(The capstan motor is centrally located when the unit is shipped from the factory.)

(1) Provisionally tighten the three screws (A) securing the capstan motor.

(2) Install the mechanism assembly to which the capstan motor is provisionally fastened on the bottom chassis which incorporates the Main board assembly. (No need to tighten the screws for mounting the mechanism.) Make sure that all the connectors for the mechanism assembly and the Main board assembly are correctly installed as indicated in Fig. 2-2-18.

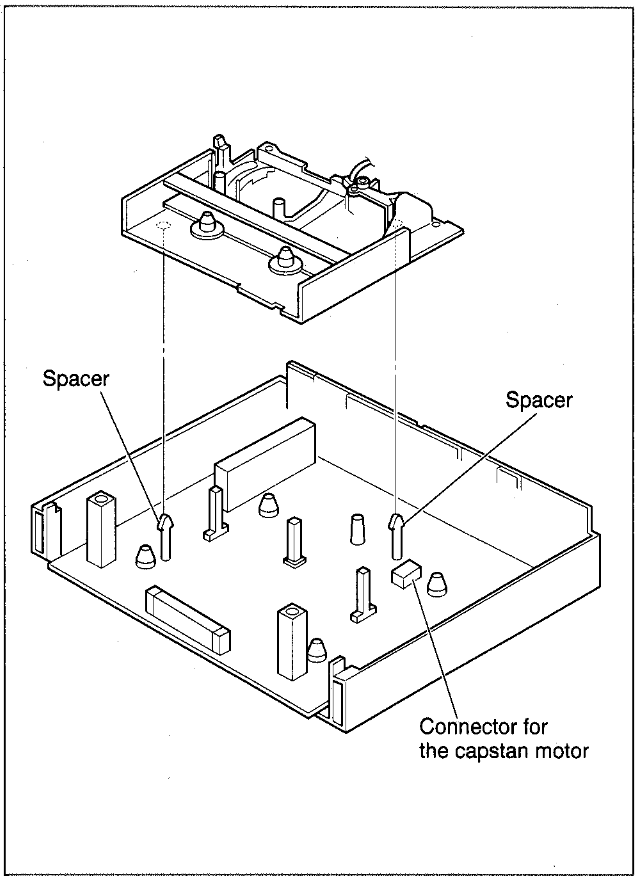


Fig. 2-2-18

(3) Making sure that the connector for the capstan motor is correctly mounted, and securely tighten the three screws (A).

Note: ***When the capstan motor has been replaced with a new one, perform recording in the EP(or LP) mode for at least 2 minutes at normal temperatures immediately before starting the FF/REW or SEARCH operations (Aging).***

2.2.9 Pole Base Assembly (supply or take-up side)

1. How to remove

(1) Remove the UV catcher 2 on the removal side by loosening the screw (A).

(2) Remove the pole base assembly on the supply side from the mechanism assembly by loosening the screw (B) on the mechanism assembly back side and sliding the pole base assembly toward the UV catcher 2.

(3) As for the pole base assembly on the take-up side, turn the pulley of the loading motor to lower the cassette holder because the screw (B) is hidden under the control plate. (See the "Procedures for Lowering the Cassette holder assembly" of 1.3 DISASSEMBLY/ASSEMBLY METHOD.) Further turn the motor pulley to move the cassette holder until the screw (B) is no longer under the control plate (in the half-loading position). Then remove it as done for the supply side by removing the screw (B).

NOTE: *After reinstalling the Pole base assembly and the UV catcher2, be sure to perform compatibility adjustment.*

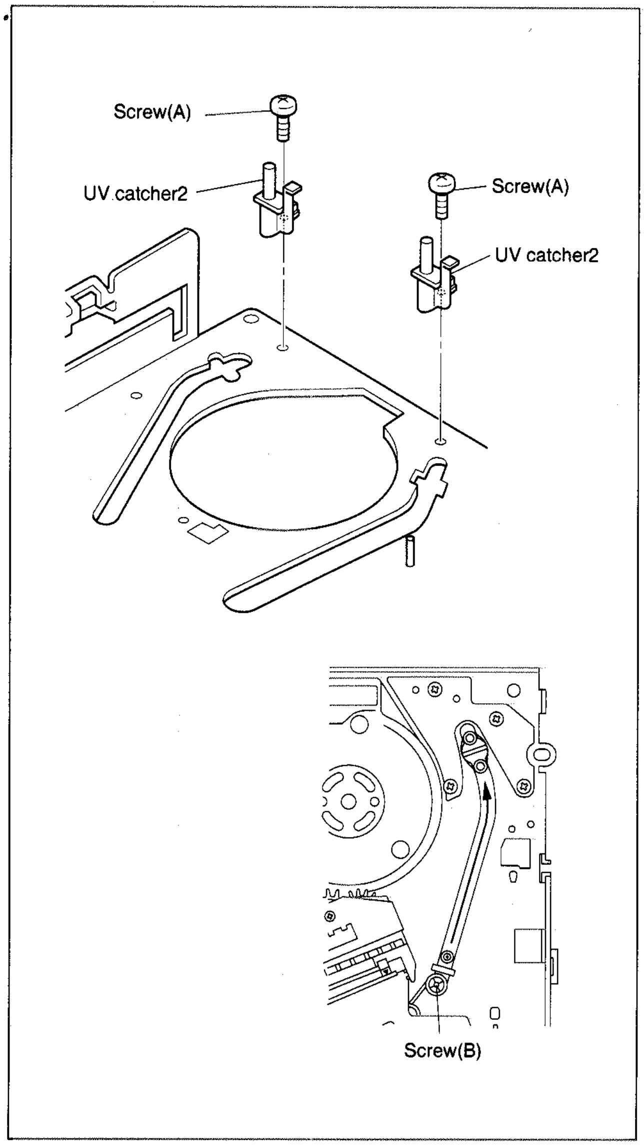

Screw(A)
UV catcher2
Screw(A)
UV catcher2
Screw(B)

Fig. 2-2-19

2.2.10 Rotary Encoder

1. How to remove

(1) Remove the screw (A) and remove the rotary encoder by pulling it up. (See Fig. 2-2-20.)

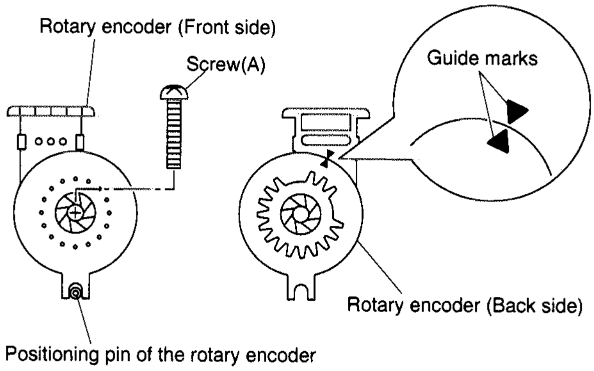

Rotary encoder (Front side)
Screw(A)
Guide marks
Rotary encoder (Back side)
Positioning pin of the rotary encoder

Fig. 2-2-20

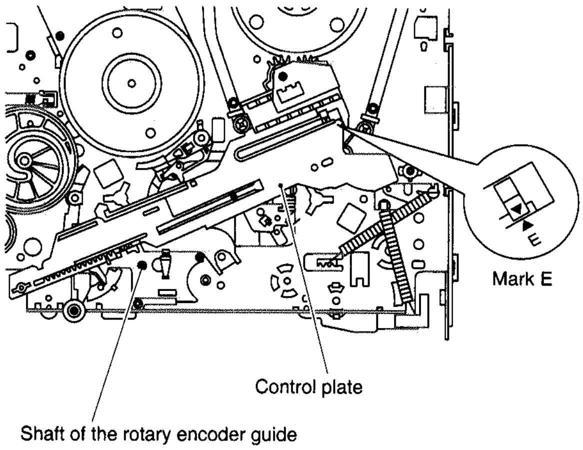

Mark E
E
Control plate
Shaft of the rotary encoder guide

Fig. 2-2-21

2. How to install (Phase matching)

(1) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft and bring the guide marks on the rotary encoder into alignment as indicated in Fig.2-2-20. (See Fig. 2-2-20 and Fig. 2-2-21.)

(2) Turn over the rotary encoder with its guide marks kept in alignment and install it by fitting on the shaft of the rotary encoder guide and the positioning pin.

(3) Tighten the screw (A) to complete the installation.

2.2.11 Clutch Unit

(1) Remove the belt wound around the capstan motor and the clutch unit.

(2) Remove the slit washer and remove the clutch unit.

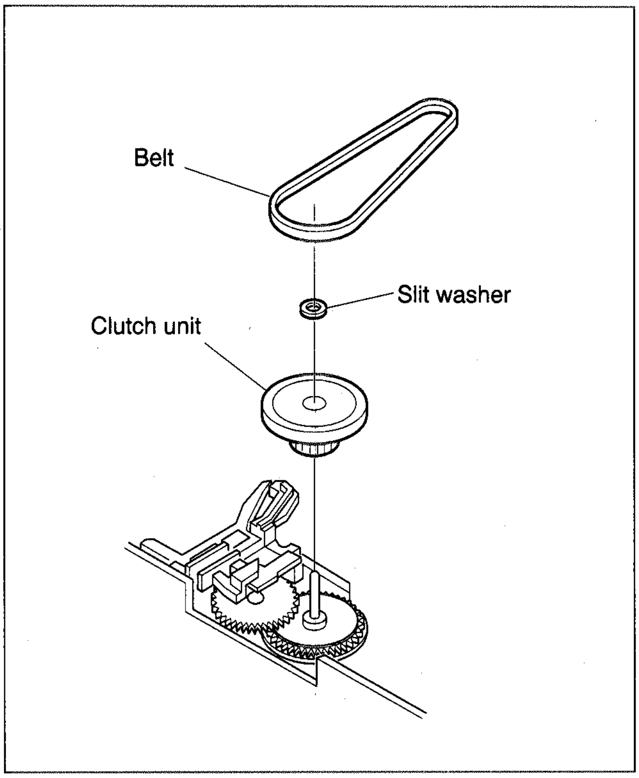

Belt
Slit washer
Clutch unit

Fig. 2-2-22

2.2.12 Change Lever Assembly, Direct Gear and Clutch Gear1

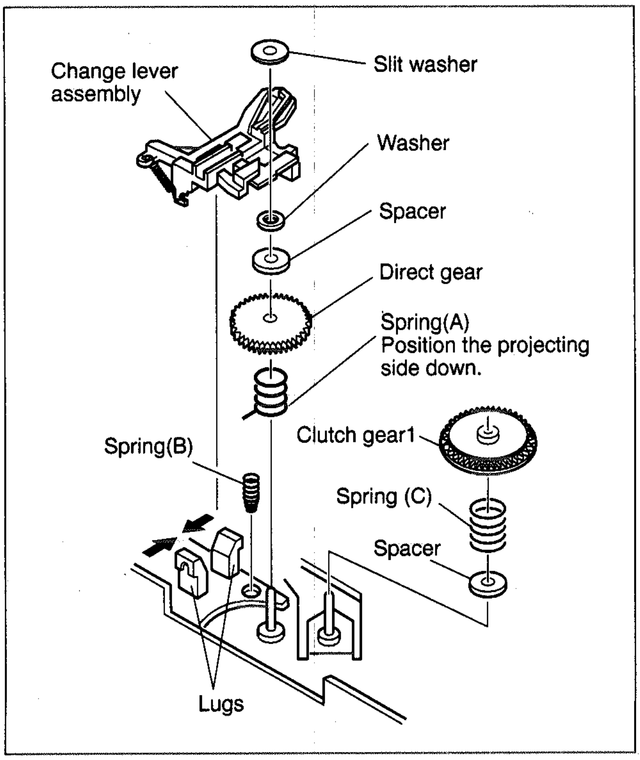

Change lever assembly
Slit washer
Washer
Spacer
Direct gear
Spring(A)
Position the projecting side down.
Spring(B)
Clutch gear1
Spring (C)
Spacer
Lugs

Fig. 2-2-23

1. How to remove

(1) Release the two lugs of the rotary encoder guide in the arrow-indicated direction and remove the change lever assembly.

(2) Remove the slit washer retaining the direct gear and remove the latter.
Take care so as not to lose the washer and spring. (See Fig.2-2-23.)

2. How to install

(1) Install the clutch gear1, spring (A), spring (C), direct gear, spacer and others to the individual shafts of the main deck, and finally the slit washer. (See Fig.2-2-23.)

(2) Let the spring (B) drops into the rotary encoder guide hole and install the change lever assembly.(Take care not to mistake a direction of the spring.) The point is to slightly lift the clutch gear1 and catch it from the both sides with the assembly. (See Fig.2-2-24.)

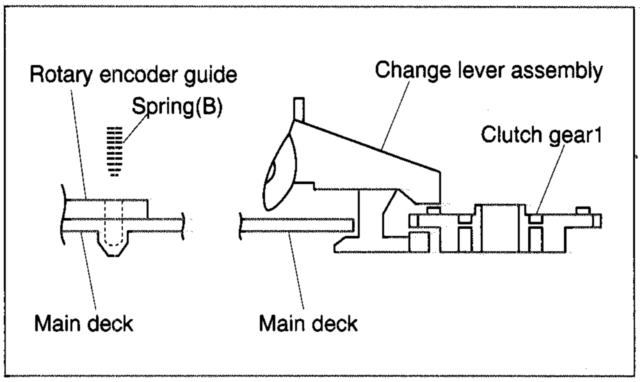

Rotary encoder guide
Spring(B)
Change lever assembly
Clutch gear1
Main deck
Main deck

Fig. 2-2-24

2.2.13 Link Lever

1. How to remove

(1) Remove the two slit washers.

(2) Remove the link lever by lifting it from the shaft retained by the slit washers. Then swing the link lever counterclockwise and remove it from the locking section of the control plate.

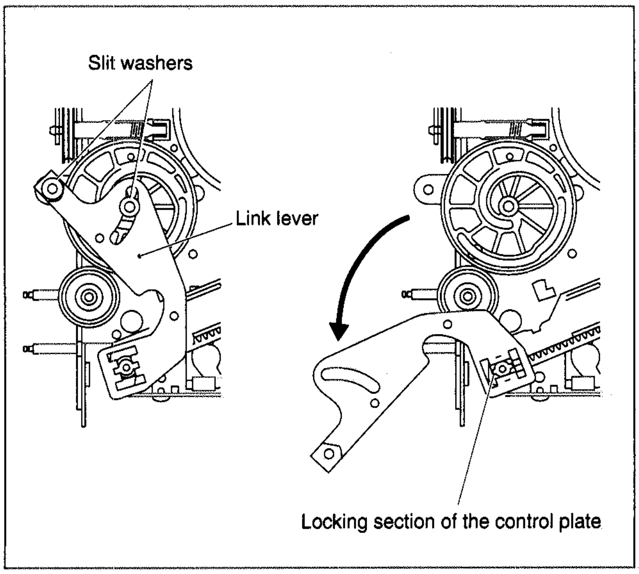

Slit washers
Link lever
Locking section of the control plate

Fig. 2-2-25

2. How to install (Phase matching)

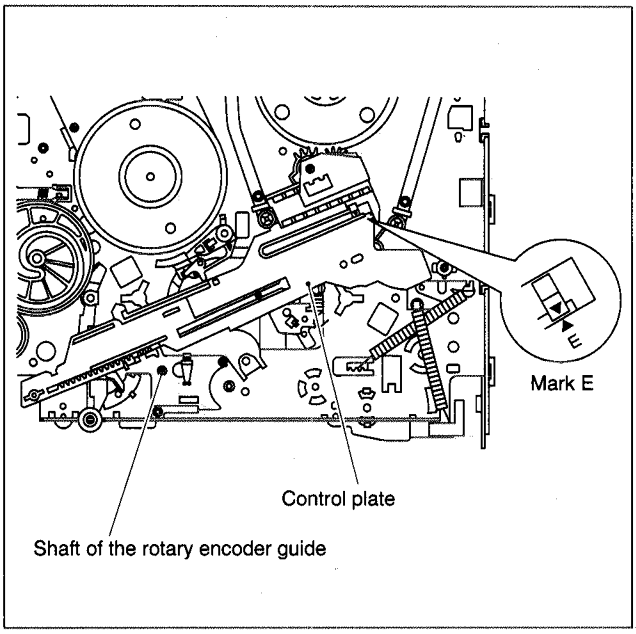
(1) Slide the control plate so that its mark E is aligned with the mark ▼ on the loading arm gear shaft. (See Fig.2-2-26.)

(2) Rotate the worm gear until the guide hole of the control cam is aligned exactly with the guide hole of the main deck. (See Fig.2-2-27.)

(3) Insert the link lever into the locking section of the control plate. (See Fig.2-2-25.)

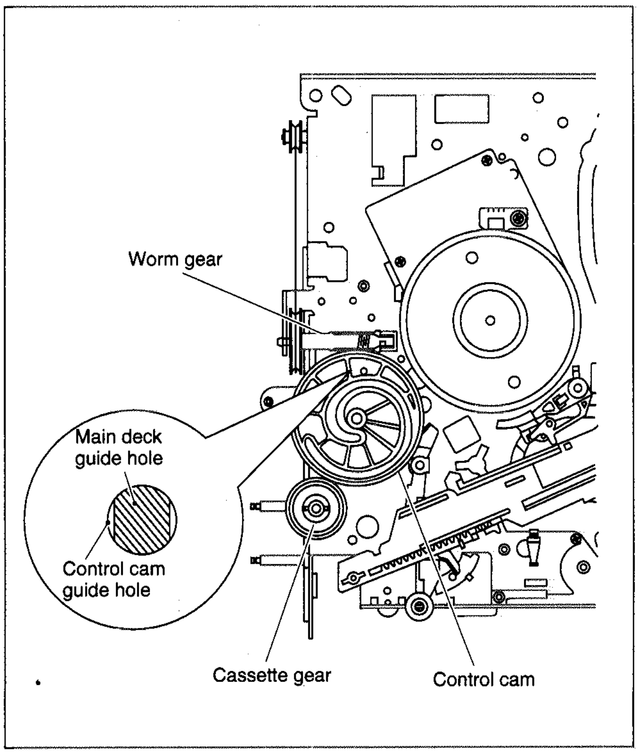
(4) Rotate the link lever clockwise so that it is installed on the shafts in the centre and on the left of the control cam.

(5) Fasten the slit washers at these two points.



E
Mark E
Control plate
Shaft of the rotary encoder guide

Fig. 2-2-26



Worm gear
Main deck guide hole
Control cam guide hole
Cassette gear
Control cam

Fig. 2-2-27

2.2.14 Cassette Gear, Control Cam and Worm Gear

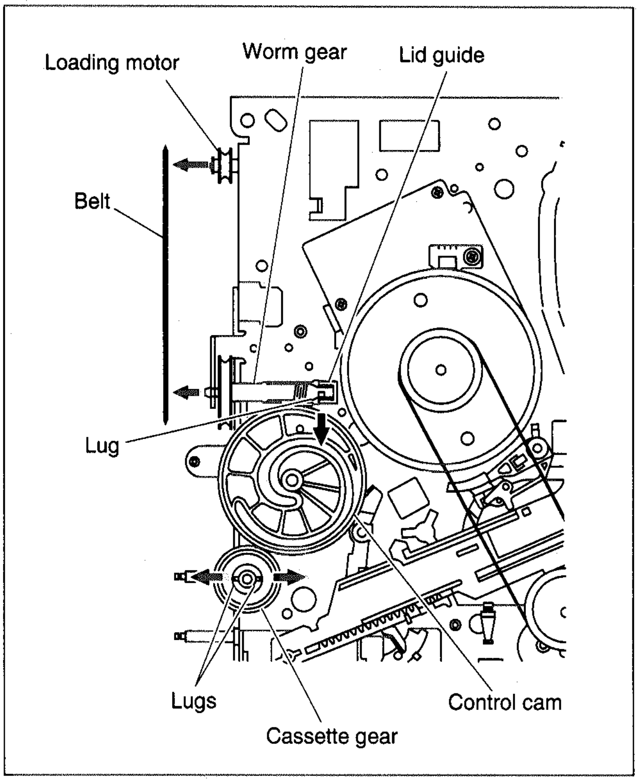
1. How to remove

(1) Remove the control cam by lifting it.

(2) Open the two lugs of the cassette gear outward and pull the latter off.

(3) Remove the belt wound around the worm gear and the loading motor.

(4) Open the lug of the lid guide outward and remove the worm gear.



Loading motor
Worm gear
Lid guide
Belt
Lug
Lugs
Control cam
Cassette gear

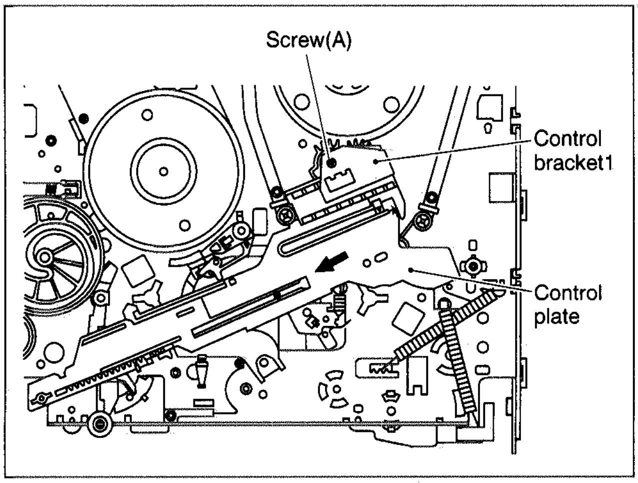
Fig. 2-2-28

2.2.15 Control Plate

1. How to remove

(1) Remove the screw (A) retaining the control bracket 1 and remove the latter.

(2) Slide the control plate as indicated by the arrow and remove the control plate. (See Fig.2-2-29.)



Screw(A)
Control bracket1
Control plate

Fig. 2-2-29

2. How to install (Phase matching)

(1) Adjust the position of the idler arm assembly pin as indicated in Fig.2-2-30 (to the left of centre of the R section).

(2) Bring the guide hole of the take-up lever into alignment with the hole at the control plate guide and fix the position by inserting a 1.5 mm hexagonal wrench.

(3) Install the control plate so that the section A of the loading arm gear shaft fits into the hole (A) of the control plate, the section B of the control plate guide into the hole (B), and the control plate comes under the section C of the rotary encoder guide and the section D of the loading arm gear shaft while press-fit the pole base assmebly (supply side) as indicated by the arrow. It is important that the tension arm assembly shaft is positioned closer toward you than the control plate. (See Fig.2-2-31.)

(4) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft. (See Fig.2-2-31.)

(5) Pull off the hexagonal wrench for positioning.

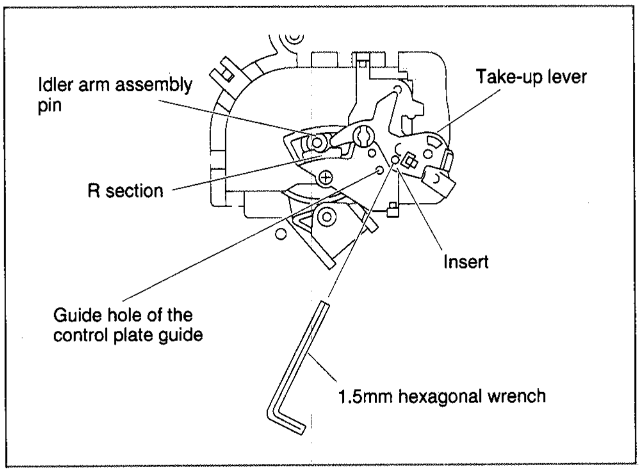

Idler arm assembly pin
Take-up lever
R section
Insert
Guide hole of the control plate guide
1.5mm hexagonal wrench

Fig. 2-2-30

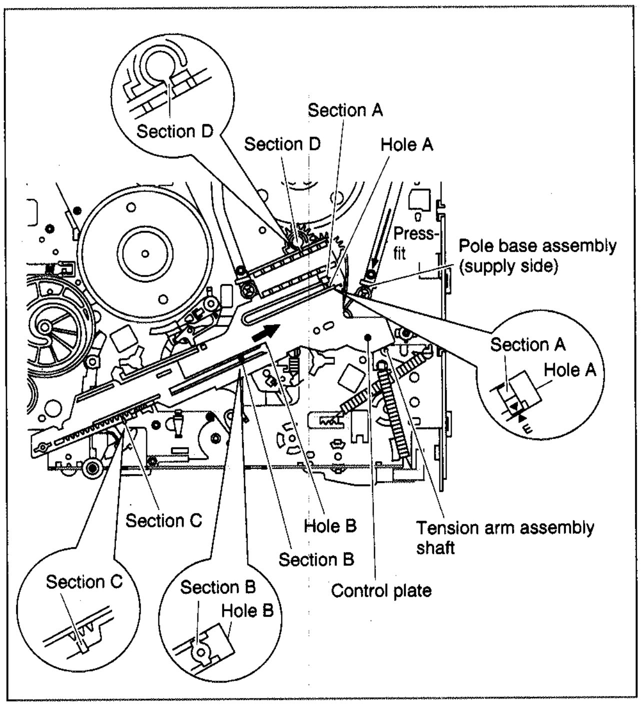

Section D
Section A
Section D
Hole A
Press-fit
Pole base assembly (supply side)
Section A
Hole A
E
Section C
Hole B
Tension arm assembly shaft
Section B
Section C
Section B
Hole B
Control plate

Fig. 2-2-31

2.2.16 Loading Arm Gear (supply or take-up side) and Loading Arm Gear Shaft

1. How to remove

(1) Remove the loading arm gear (supply side) by loosening the screw (A). (See Fig. 2-2-32.)

(2) Remove the screw (B) and remove the torsion arm from the pole base assembly (take-up side). (See Fig.2-2-32.)

(3) Turn the loading arm gear (take-up side) clockwise so that the notch of the loading arm gear (take-up side) is in alignment with the projection of the loading arm gear shaft and lift it.
Likewise, turn the loading arm counterclockwise so that the notch is in alignment with the projection and remove the loading arm gear (take-up side). (See Fig.2-2-32 and Fig. 2-2-33.)

(4) When removing the loading arm gear shaft, be sure of first removing the screw retaining the drum assembly (on the back side of the loading arm gear shaft). Then remove the screw (C) and remove the loading arm gear shaft by sliding it.

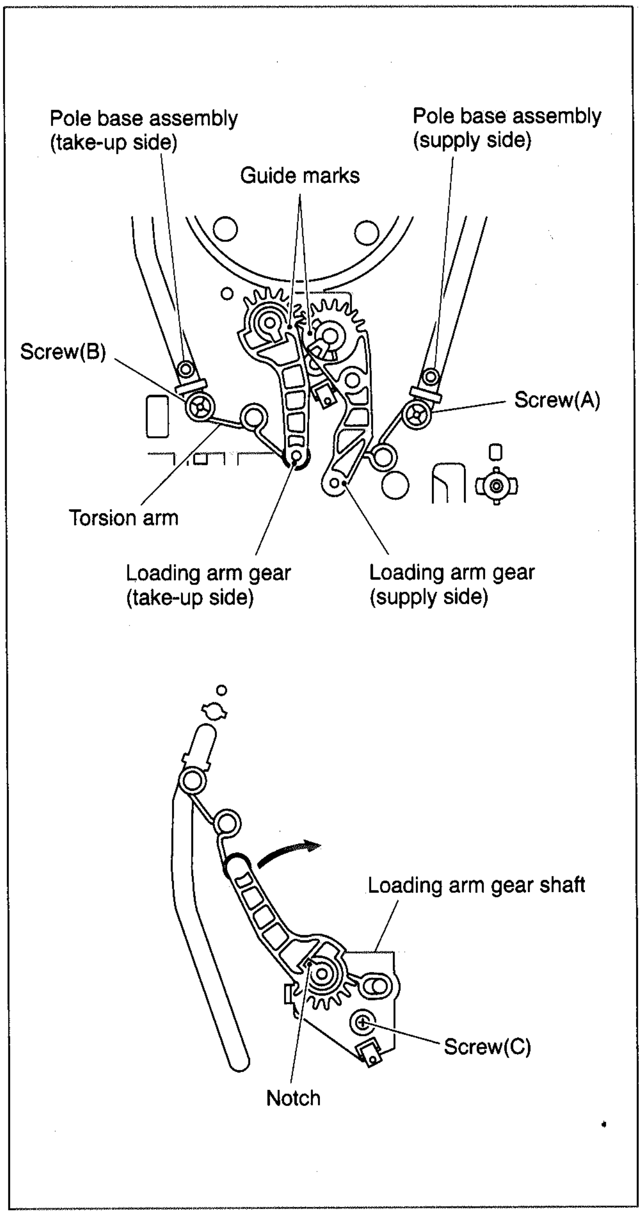

Pole base assembly (take-up side)
Pole base assembly (supply side)
Guide marks
Screw(B)
Screw(A)
Torsion arm
Loading arm gear (take-up side)
Loading arm gear (supply side)
Loading arm gear shaft
Screw(C)
Notch

Fig. 2-2-32

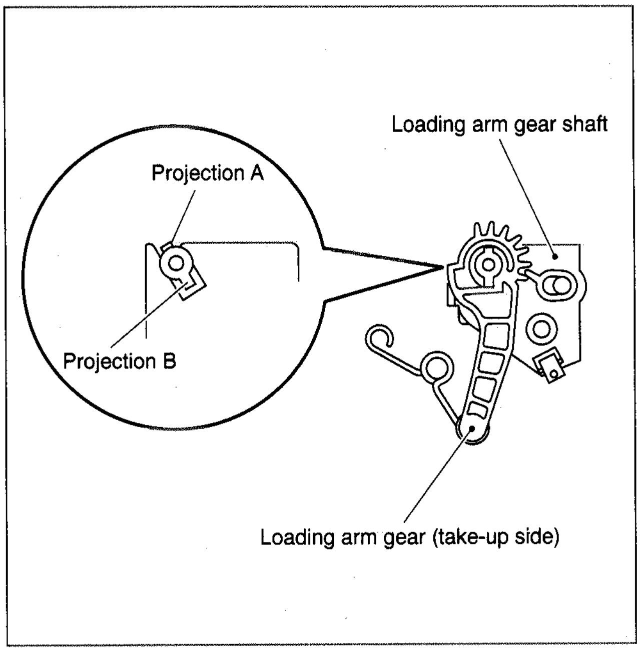

Loading arm gear shaft
Projection A
Projection B
Loading arm gear (take-up side)

Fig. 2-2-33

2. How to install

(1) Align the notch of the loading arm gear (take-up side) to the projection B of the loading arm gear shaft and slip it over. Then rotate it clockwise for alignment with the projection A and slip it down to the bottom. (See Fig.2-2-33.)

(2) Then turn the loading arm gear (take-up side) counterclockwise. Hang the torsion arm on the pole base assembly (take-up side) and tighten the screw (B).

(3) Install the loading arm gear (supply side) so that the guide mark of the loading arm gear (take-up side) is in alignment with the guide mark of the loading arm gear (supply side). Then hang the torsion arm on the pole base assembly (supply side) and tighten the screw (A). (See Fig.2-2-32.)

2.2.17 Take-up Lever, Take-up Head and Control Plate Guide

(1) Remove the spring of the take-up lever from the main deck.

(2) Remove the lug (A) of the take-up lever from the main deck and pull out the take-up lever and the take-up head together.

(3) Remove the screw (A).

(4) Align the idler arm assembly pin in the centre of the R section of the control plate guide, remove the control plate guide lugs (B) and (C) from the main deck, and remove the control plate guide.

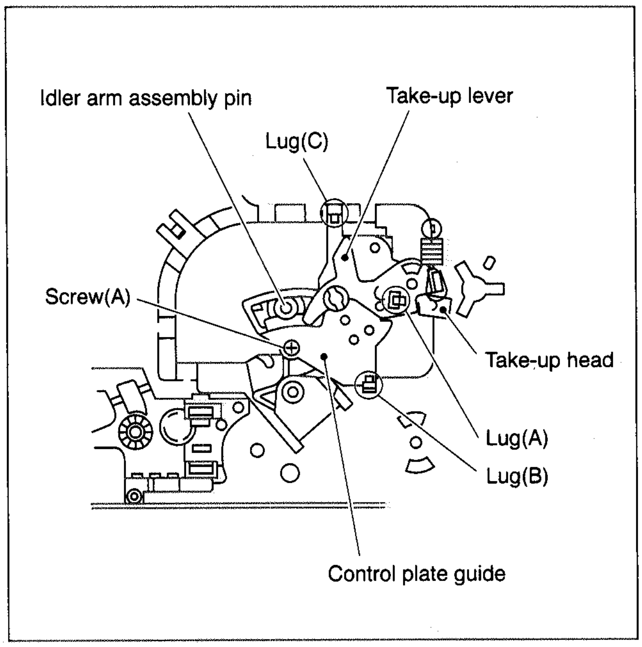

Idler arm assembly pin
Take-up lever
Lug(C)
Screw(A)
Take-up head
Lug(A)
Lug(B)
Control plate guide

Fig. 2-2-34

2.2.18 Capstan Brake Assembly

1. How to remove

(1) Move the lug (A) of the capstan brake assembly in the arrow-indicated direction so that it comes into alignment with the notch of the main deck. (See Fig. 2-2-35.)

(2) Remove the lug (B) of the capstan brake assembly from the main deck and remove the capstan brake assembly.

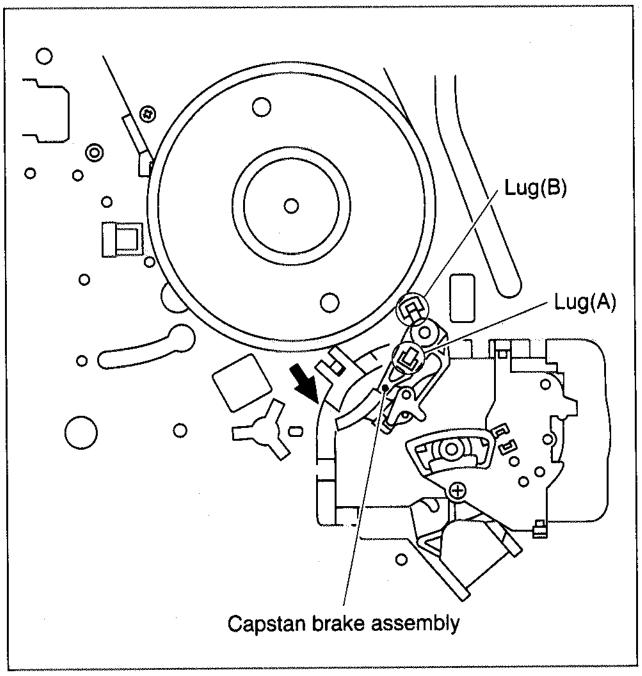

Lug(B)
Lug(A)
Capstan brake assembly

Fig. 2-2-35

2.2.19 Sub Brake Assembly (take-up side)

1. How to remove

(1) Remove the spring attached to the lid guide and sub brake assembly (take-up side).

(2) Bring the lug (A) of the sub brake assembly (take-up side) into alignment with the notch of the main deck.

(3) Remove the lugs (B) and (C) of the sub brake assembly (take-up side) from the main deck and remove the sub brake assembly (take-up side).

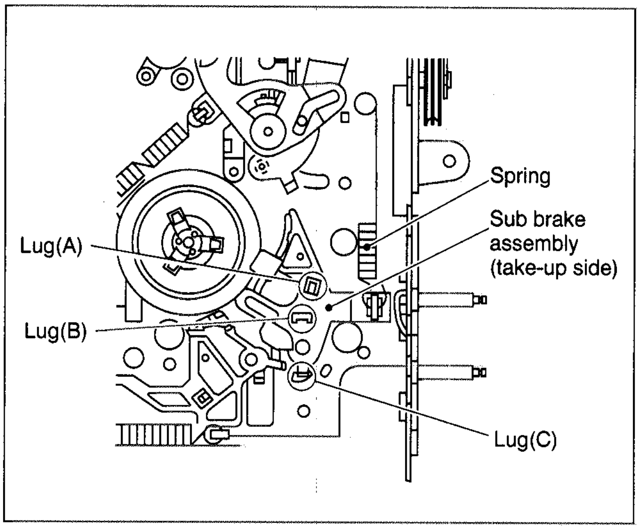

Spring
Sub brake assembly (take-up side)
Lug(A)
Lug(B)
Lug(C)

Fig. 2-2-36

2.2.20 Main Brake Assembly (take-up side), Reel Disk (take-up side) and Main Brake Assembly (supply side)

1. How to remove

(1) Move the main brake assembly (take-up side) in the arrow-indicated direction and remove the reel disk (take-up side).

(2) Remove the spring attached to the main brake assembly.

(3) Remove the lug (A) of the main brake assembly (take-up side) and pull out the lug (B) after bringing it into alignment with the main deck notch.

(4) Remove the lugs (C), (D) and (E) of the main brake assembly (supply side) from the main deck and pull them off. (See Fig.2-2-37.)

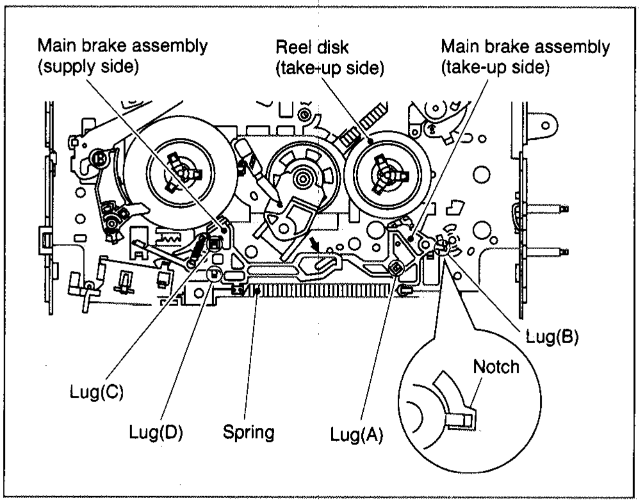

Main brake assembly (supply side)
Reel disk (take-up side)
Main brake assembly (take-up side)
Lug(B)
Notch
Lug(C)
Lug(D)
Spring
Lug(A)

Fig. 2-2-37

(5) When installing the main brake assembly (take-up side), slide the brake lever in the direction as indicated by the arrow to prevent it from hitting the projection of the main brake assembly (take-up side). (See Fig.2-2-38.)

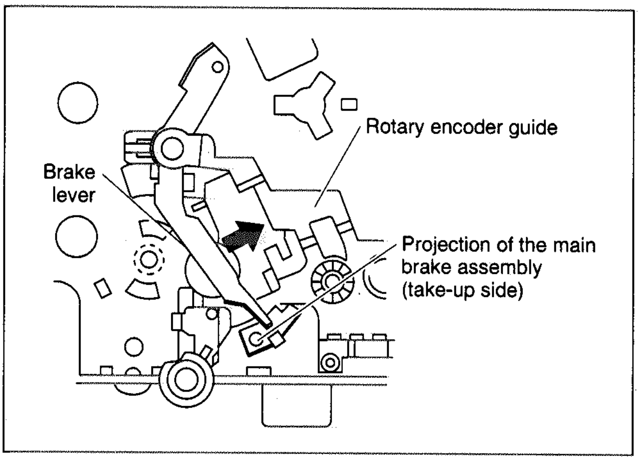

Rotary encoder guide
Brake lever
Projection of the main brake assembly (take-up side)

Fig. 2-2-38

2.2.21 Tension Brake Assembly, Reel Disk (supply side) and Tension Arm Assembly

1. How to remove

(1) Remove the three lugs of the tension brake assembly from the main deck and pull them off.

(2) Remove the reel disk (supply side) by loosening in the arrow-indicated direction the main brake assembly (supply side).

(3) Remove the tension spring on the back of the main deck. Then release the lug of the tension arm bearing in the arrow-indicated direction and draw out the tension arm assembly. (See Fig. 2-2-39.)

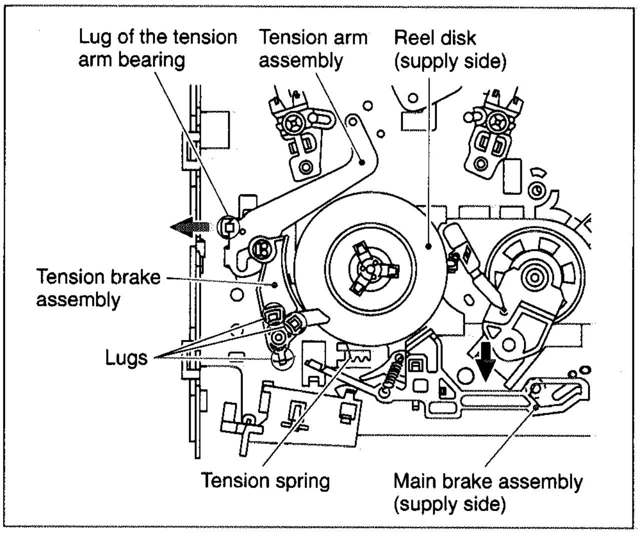

Lug of the tension arm bearing
Tension arm assembly
Reel disk (supply side)
Tension brake assembly
Lugs
Tension spring
Main brake assembly (supply side)

Fig. 2-2-39

2.2.22 Idler Lever, Idler Arm Assembly

1. How to remove

(1) Remove the lug of the idler lever from the main deck and remove the hook fitted in the idler arm assembly hole by lifting it.

(2) Remove the slit washer and pull out the idler arm assembly.

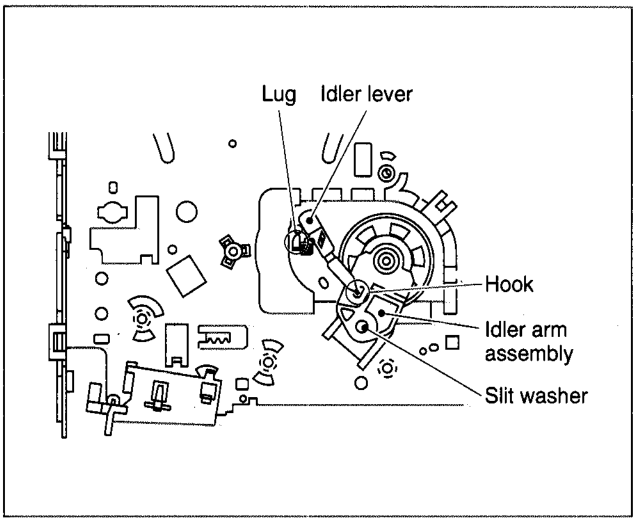

Lug
Idler lever
Hook
Idler arm assembly
Slit washer

Fig. 2-2-40

2.2.23 Stator Assembly

(1) Remove the flat cable.

(2) Remove the two screws (A).

(3) Remove the stator assembly by lifting in the arrow-indicated direction. (Take care that the brush spring does not jump out.)

(4) After installation, be sure to perform the PB switching point adjustment according to the electrical adjustment procedure.

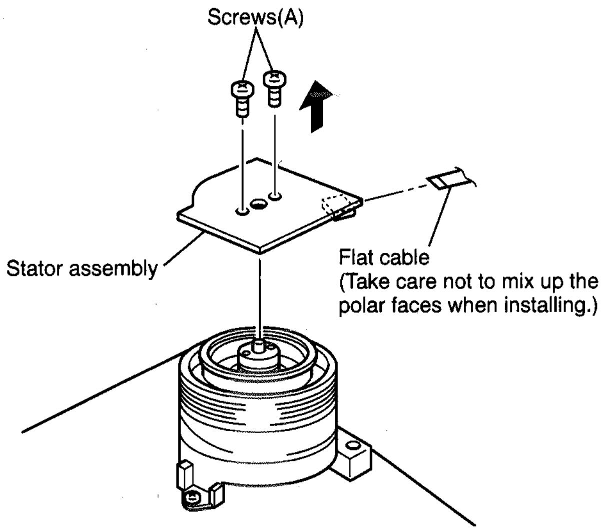

Screws(A)
Stator assembly
Flat cable
(Take care not to mix up the polar faces when installing.)

Fig. 2-2-41

2.2.24 Rotor Assembly

(1) Remove the stator assembly.

(2) Remove the two screws (B) and remove the rotor assembly.

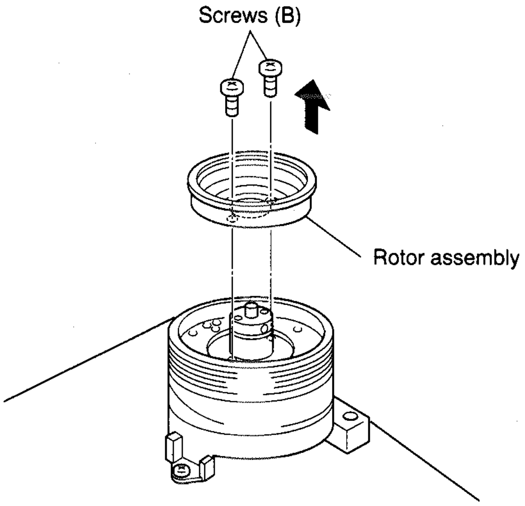

Screws (B)
Rotor assembly

Fig. 2-2-42

Note: *When installing the rotor assembly, note that a normal picture cannot be obtained without ensuring the phase matching as mentioned below.*

(3) Match the phases of the upper drum assembly and the rotor assembly as indicated in Fig.2-2-43.

(4) Place the upper drum assembly hole (a) over the rotor assembly holes (b) (with three holes to be aligned) and tighten the two screws (B). (See Fig.2-2-43.)

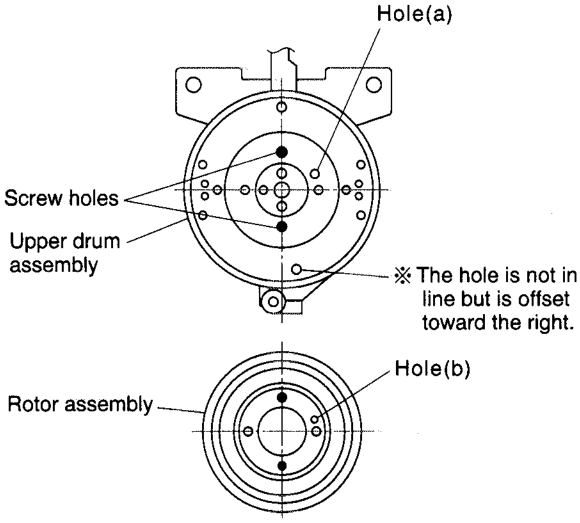

Hole(a)
Screw holes
Upper drum assembly
※ The hole is not in line but is offset toward the right.
Hole(b)
Rotor assembly

Fig. 2-2-43

2.2.25 Upper Drum Assembly

1. How to remove

(1) Remove the stator assembly and rotor assembly.

(2) Loosen the screw of the collar assembly using a 1.5 mm hexagonal wrench and remove the collar assembly. Also remove the brush, spring and cap at one time.

(3) Remove the upper drum assembly and remove the washer using tweezers.

Note: *When replacement is required, control the up-down movement of the brush. Never apply grease.*

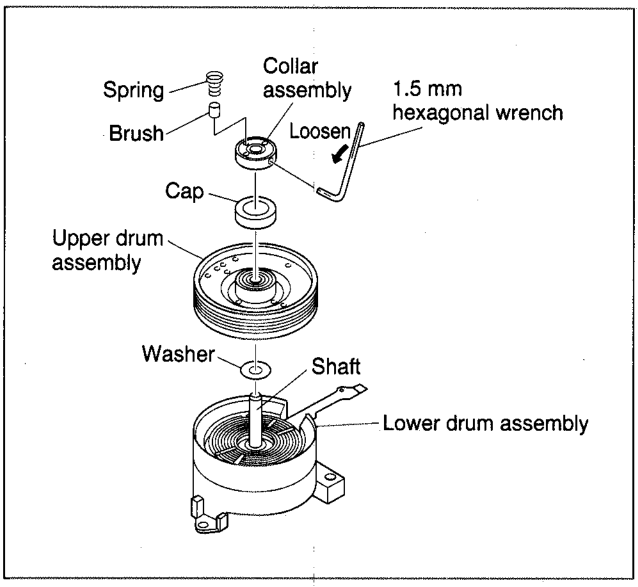

Spring
Collar assembly
1.5 mm hexagonal wrench
Brush
Loosen
Cap
Upper drum assembly
Washer
Shaft
Lower drum assembly

Fig. 2-2-44

2. How to install

(1) Clean the coil parts of the lower drum assembly and the newly installed upper drum assembly with an air brush in advance. (See Fig.2-2-45.)

(2) Install a new washer and upper drum assembly on the drum shaft. (See Fig.2-2-44.)

Note: *When replacing the upper drum assembly, replace it the together with the washer.*

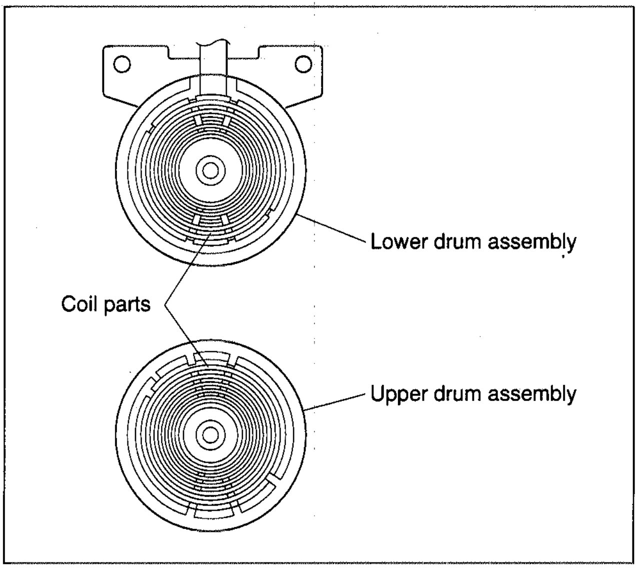

Lower drum assembly
Coil parts
Upper drum assembly

Fig. 2-2-45

(3) Install the cap to the upper drum assembly.

(4) Position the collar assembly as indicated in Fig.2-2-46 while controlling its up- down movement.

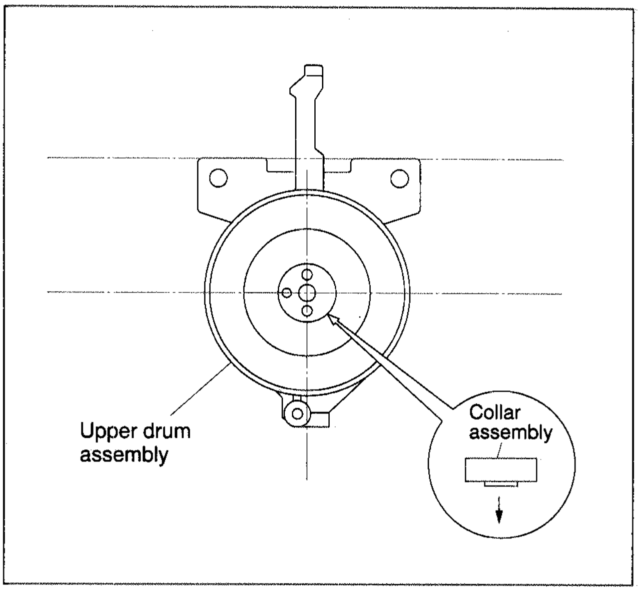

Upper drum assembly
Collar assembly

Fig. 2-2-46

(5) Secure the collar assembly in position with a hexagonal wrench while pressing its top with the fingers.

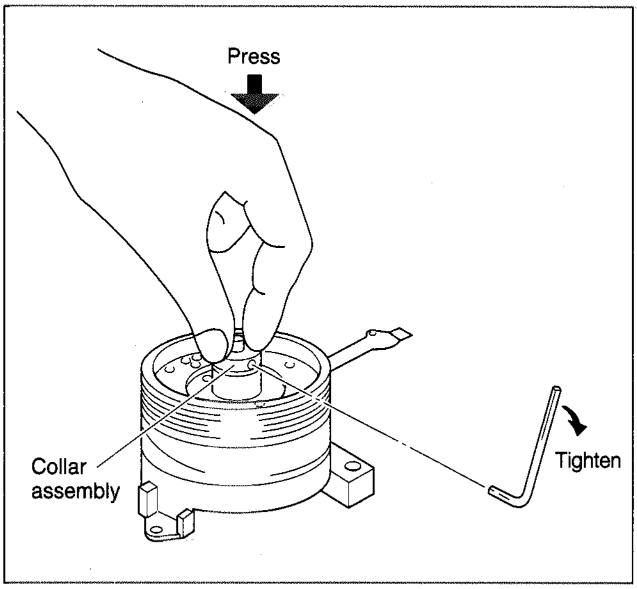

Press
Collar assembly
Tighten

Fig. 2-2-47

(6) After installation, gently turn the upper drum assembly with your hand to make sure that it turns normally. Then install the brush and the spring.

(7) Install the rotor assembly and stator assembly according to Fig 2-2-41 and 2-2-42.

(8) When installation is complete, clean the upper drum assembly and lower drum assembly and carry out the following adjustments.

- PB switching point adjustment
- Slow tracking adjustment
- Compatibility adjustment (Be sure to check for compatibility for the EP (or LP) mode.)

2.3 COMPATIBILITY ADJUSTMENT

Notes:
- *Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the audio control head, drum assembly or any part of the tape transport system.*
- *To avoid any damage to the alignment tape while performing the compatibility adjustment, get a separate cassette tape (for recording and play back) ready to be used for checking the initial tape running behavior.*

2.3.1 Checking/Adjustment of FM Waveform Linearity

Signal (A1) (A2)	• Alignment tape [MHPE] • Alignment tape [MHPE-L]
Mode (B)	• PB
Equipment (C)	• Oscilloscope
Measuring point (D)	• TP106 (PB. FM) [Main board]
External trigger (E)	• TP111 (D.FF) [Main board]
Adjustment part (F)	• Guide roller [Mechanism assembly]
Specified value (G)	• Flat V.PB FM waveform
Adjustment tool (H)	• Roller driver [PTU94002]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. (This also brings tracking to the centre.)
(4) Make sure that there is no significant level drop of the V.PB FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig. 2-3-1.)
(5) Reduce the V.PB FM waveform while pressing the channel buttons (+, –) during playback. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver to make the V.PB FM waveform linear.
If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the guide roller to make it linear. (See Fig. 2-3-3.)
(6) Then play back the alignment tape (A2) and make sure that the V.PB FM waveform varies in parallel and linearly with the tracking operation. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).
(7) Unload the cassette tape once, play back the alignment tape (A2) again and confirm the V.PB FM waveform.

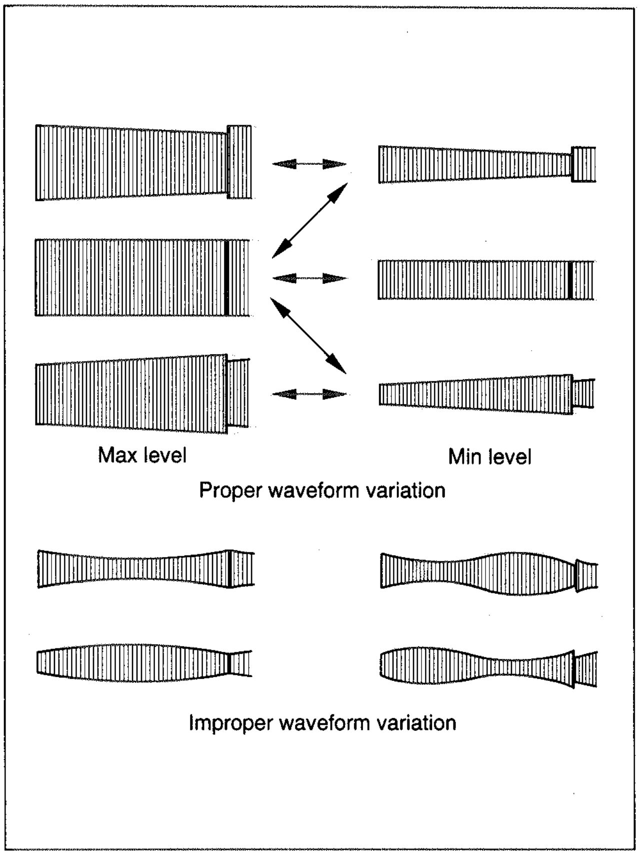


Fig. 2-3-1

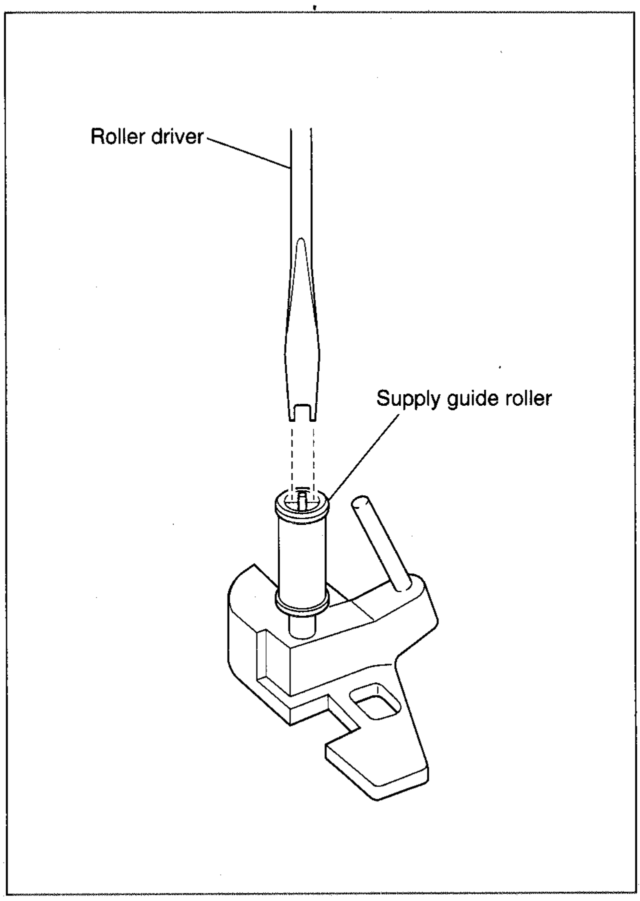


Fig. 2-3-2

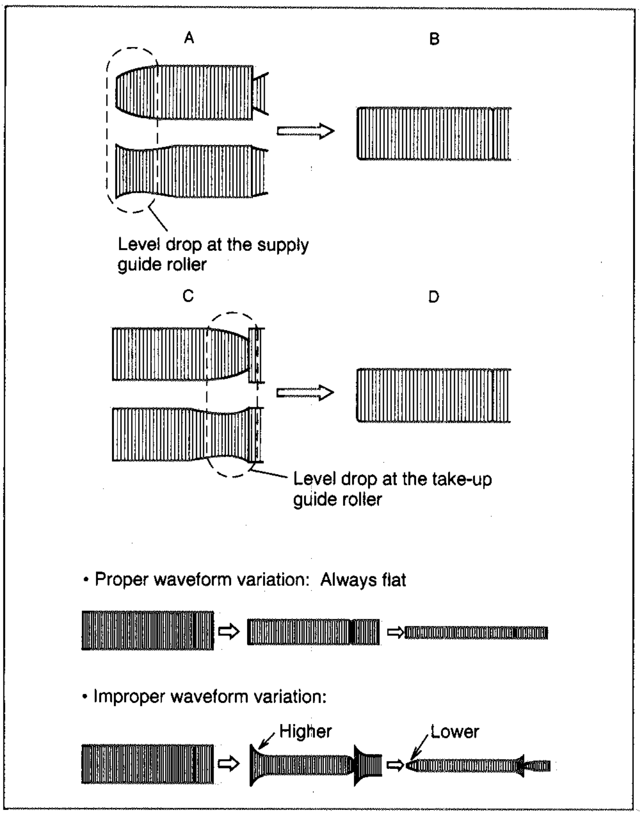
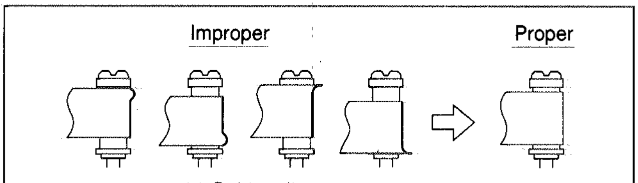
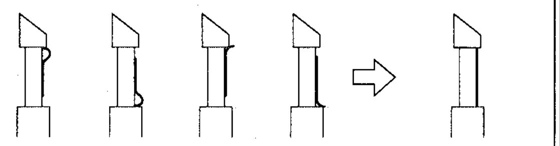

A
B
Level drop at the supply guide roller
C
D
Level drop at the take-up guide roller
• Proper waveform variation: Always flat
• Improper waveform variation:
Higher
Lower

Fig. 2-3-3


Improper
Proper

(a) Guide roller



(b) Guide pole

Fig. 2-3-4

2.3.2 Checking/Adjustment of the Height and Tilt of the Audio Control Head

Note: *Set a temporary level of the height of the A/C head in advance to make the adjustment easier after the A/C head has been replaced. (See Fig.2-2-15.)*

Signal (A)	• Alignment tape [MHPE]
Mode (B)	• PB
Equipment (C)	• Oscilloscope
Measuring point (D1) (D2)	• AUDIO OUT terminal • TP4001 (CTL. P) [Main board]
External trigger (E)	• TP111 (D.FF) [Main board]
Adjustment part (F)	• A/C head [Mechanism assembly]
Specified value (G)	• Maximum waveform

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the AUDIO OUT waveform and Control pulse waveform at the measuring points (D1) and (D2) in the ALT mode.
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. (This also brings tracking to the centre.)
(4) Adjust the AUDIO OUT waveform and Control pulse waveform by turning the screws (1), (2) and (3) little by little until both waveforms reach maximum. The screw (1) and (3) are for adjustment of tilt and the screw (2) for azimuth.

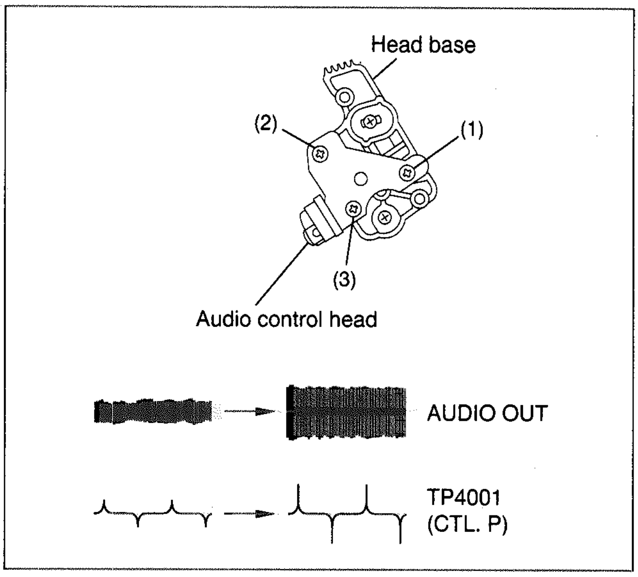

Head base
(2)
(1)
(3)
Audio control head
AUDIO OUT
TP4001
(CTL. P)

Fig. 2-3-5

2.3.3 Checking/Adjustment of the Audio Control Head Phase (X-Value)

Signal (A1) (A2)	• Alignment tape [MHPE] • Alignment tape [MHPE-L]
Mode (B)	• PB
Equipment (C)	• Oscilloscope
Measuring point (D)	• TP106 (PB. FM) [Main board]
External trigger (E)	• TP111 (D.FF) [Main board]
Adjustment part (F)	• A/C head base [Mechanism assembly]
Specified value (G)	• Maximum V.PB FM waveform
Adjustment tool (H)	• A/C head positioning tool [PTU94010]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. (This also brings tracking to the centre.)
(4) Loosen the screws (4) and (5), then set the A/C head positioning tool to the innermost projected part of the A/C head. (See Fig. 2-3-6.)
(5) Turn the A/C head positioning tool fully toward the capstan. Then turn it back gradually toward the drum and stop on the second peak point position of the V.PB FM waveform output level. Then tighten the screw (4) temporarily.

(6) Then play back the alignment tape (A2).

(7) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. (This also brings tracking to the centre.)

(8) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.

(9) If it is not at maximum, loosen the temporarily tightened screw (4) and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

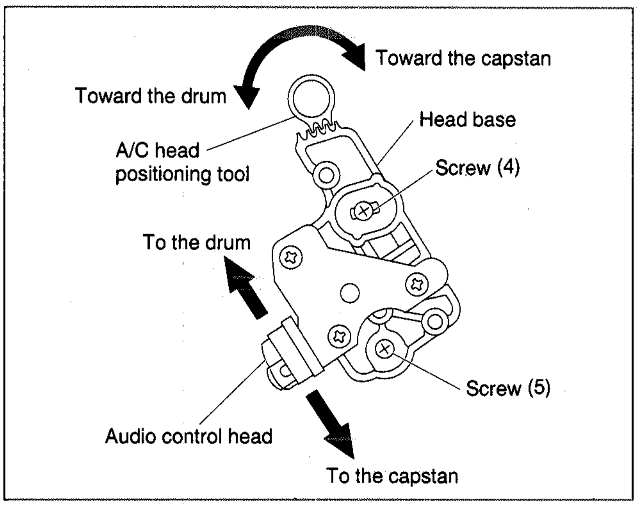

Toward the capstan
Toward the drum
Head base
A/C head positioning tool
Screw (4)
To the drum
Screw (5)
Audio control head
To the capstan

Fig. 2-3-6

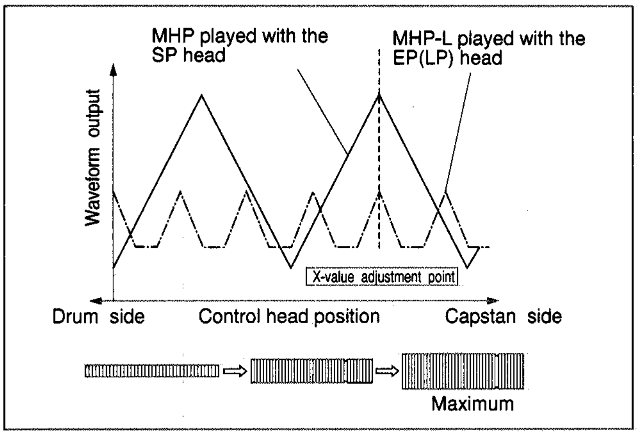


Fig. 2-3-7

2.3.4 Checking/Adjustment of the Standard Tracking Preset

NOTE : • *When using the Jig RCU, set its custom code to match the custom code of the VCR.*

Signal	(A)	• Alignment tape [MHPE-L]
Mode	(B)	• PB → Auto adjust
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM) [Main board]
External trigger	(E)	• TP111 (D.FF) [Main board]
Adjustment part	(F)	• Jig RCU: Code "50"
Specified value	(G)	• STOP mode (Maximum V.PB FM waveform)
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Play back the alignment tape (A).

(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).

(3) Confirm that the automatic tracking operation is completed.

(4) Set the VCR to the Auto adjust mode by transmitting the code (F) twice from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.

(5) If the VCR enters the eject mode, perform adjustment for the audio control head phase (X-value) again.

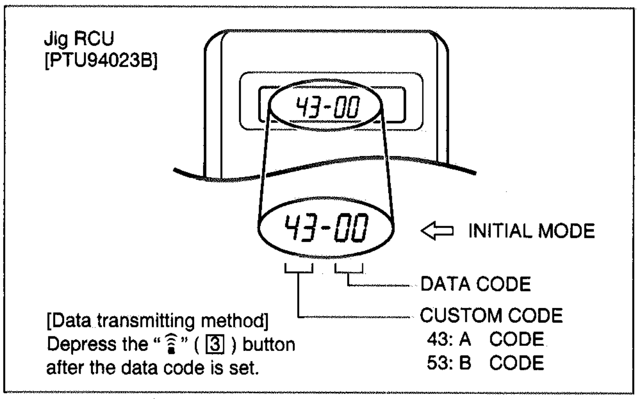

Jig RCU
[PTU94023B]
43-00
43-00
⇦ INITIAL MODE
DATA CODE
CUSTOM CODE
43: A CODE
53: B CODE
[Data transmitting method]
Depress the "⇡" (3) button
after the data code is set.

Fig. 2-3-8

2.3.5 Checking/Adjustment of the Tension Pole Position

Signal	(A)	• Back tension cassette gauge [PUJ48076-2]
Mode	(B)	• PB
Adjustment part	(F)	• Adjust pin [Mechansim assembly]
Specified value	(G)	• 25 - 51 gf•cm (2.45 – 5 x 10^{-3} Nm]

(1) Play back the back tension cassette gauge (A).

(2) Check that the indicated value on the left side gauge is within the specified value (G).

(3) If the indicated value is not within the specified value (G), perform the adjustment in a following procedure.
   1) Set the VCR to the mechanism service mode. (See 1.5 MECHANISM SERVICE MODE.)
   2) Set the VCR to the play back mode and adjust by turning adjustment pin to align the tension arm assembly edge with the main deck hole (A) on the right edge marker. (See Fig. 2-3-9)

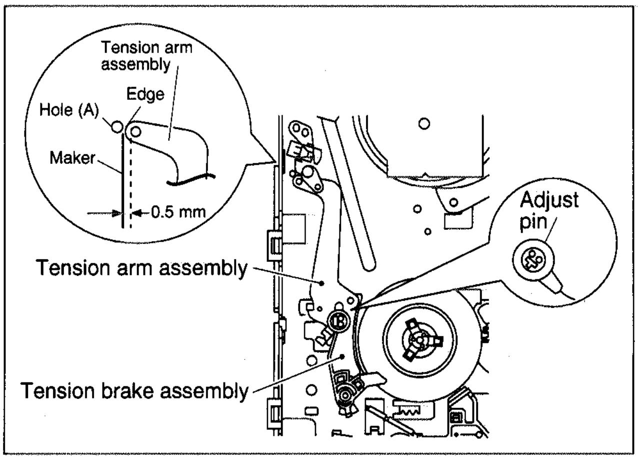
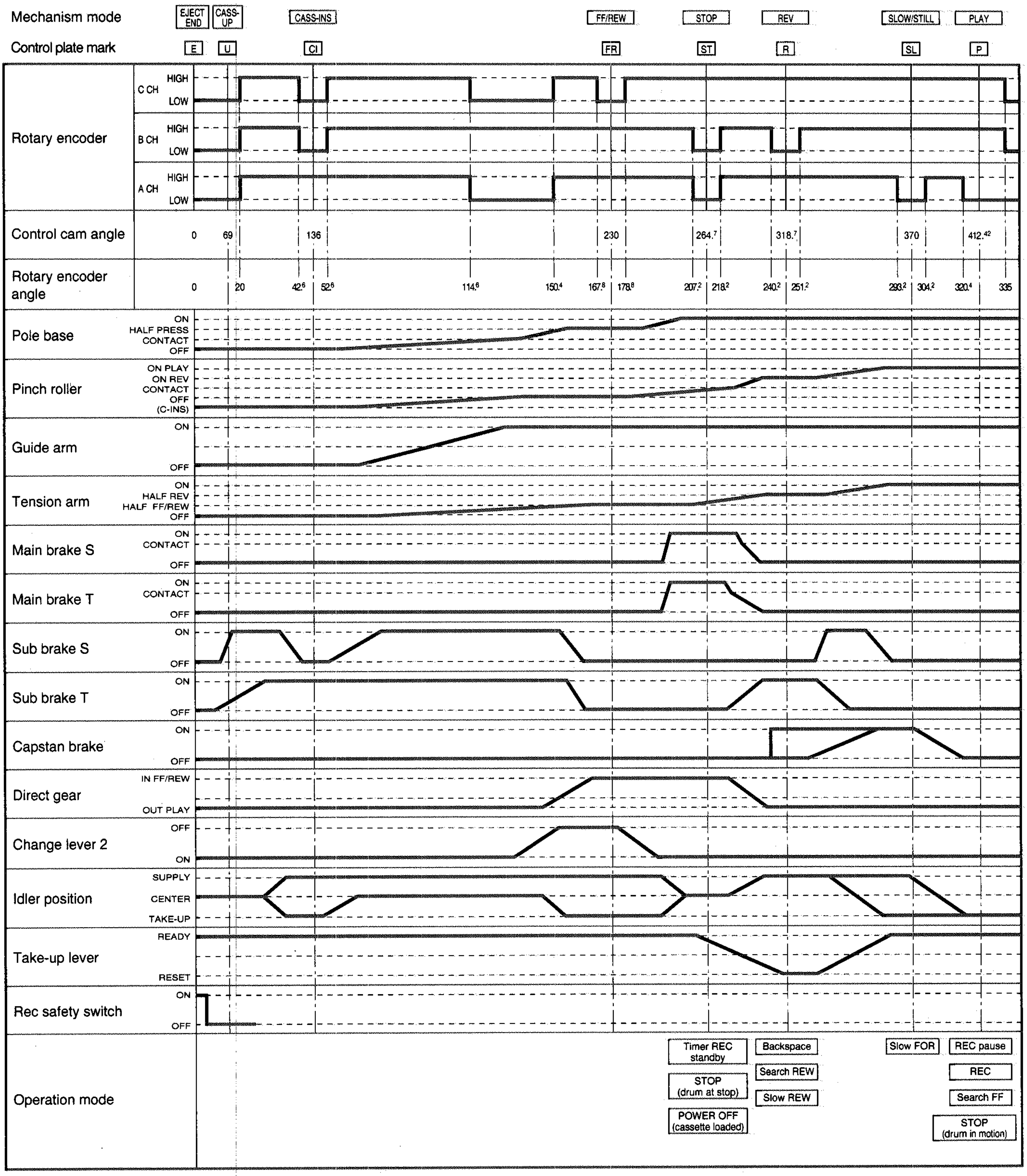

Tension arm assembly
Edge
Hole (A)
Maker
0.5 mm
Adjust pin
Tension arm assembly
Tension brake assembly

Fig. 2-3-9

Mechanism Timing Chart


Mechanism mode
EJECT END
CASS-UP
CASS-INS
FF/REW
STOP
REV
SLOW/STILL
PLAY
Control plate mark
E
U
CI
FR
ST
R
SL
P
Rotary encoder
C CH
B CH
A CH
HIGH
LOW
Control cam angle
0
69
136
230
264.7
318.7
370
412.42
Rotary encoder angle
0
20
42⁶
52⁶
114⁶
150⁴
167⁸
178⁸
207²
218²
240²
251²
293²
304²
320⁴
335
Pole base
ON
HALF PRESS
CONTACT
OFF
Pinch roller
ON PLAY
ON REV
CONTACT
OFF
(C-INS)
Guide arm
ON
OFF
Tension arm
ON
HALF REV
HALF FF/REW
OFF
Main brake S
ON
CONTACT
OFF
Main brake T
ON
CONTACT
OFF
Sub brake S
ON
OFF
Sub brake T
ON
OFF
Capstan brake
ON
OFF
Direct gear
IN FF/REW
OUT PLAY
Change lever 2
OFF
ON
Idler position
SUPPLY
CENTER
TAKE-UP
Take-up lever
READY
RESET
Rec safety switch
ON
OFF
Operation mode
Timer REC standby
STOP (drum at stop)
POWER OFF (cassette loaded)
Backspace
Search REW
Slow REW
Slow FOR
REC pause
REC
Search FF
STOP (drum in motion)

SECTION 3
ELECTRICAL ADJUSTMENT

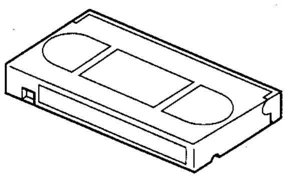
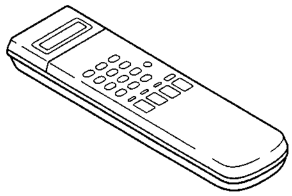
3.1 PRECAUTION

The following adjustment procedures are not only necessary after replacement of consumable mechanical parts or board assemblies, but are also provided as references to be referred to when servicing the electrical circuitry.
In case of trouble with the electrical circuitry, always begin a service by identifying the defective points by using the measuring instruments as described in the following electrical adjustment procedures. After this, proceed to the repair, replacement and/or adjustment. If the required measuring instruments are not available in the field, do not change the adjustment parts (variable resistor, etc.) carelessly.

3.1.1 Required test equipments

① Colour television or monitor
② Oscilloscope: wide-band,dual-trace,triggered delayed sweep
③ Frequency counter
④ Signal generator: RF/IF sweep/marker
⑤ Signal generator: PAL colour bar, stairstep
⑥ Recording tape
⑦ Digit-key remote controller(provided)

3.1.2 Required adjustment tools

Alignment tape (SP,stairstep) MHPE	Jig RCU PTU94023B
	

3.1.3 Colour bar signal,colour bar pattern

- PAL colour bar signal

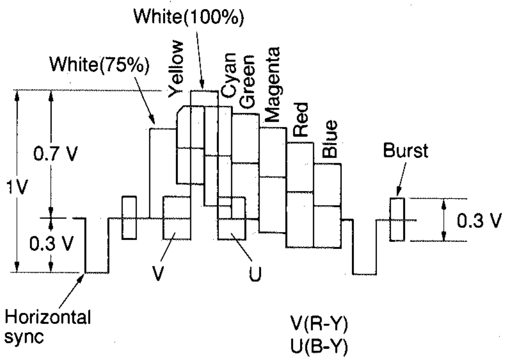

White(100%)
White(75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
0.7 V
1V
0.3 V
0.3 V
V
U
Horizontal sync
V(R-Y)
U(B-Y)

Fig.3-1-1 PAL colour bar signal waveform

- PAL colour bar pattern

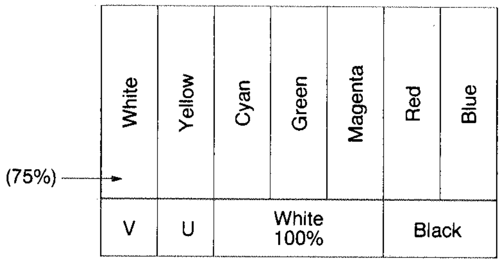
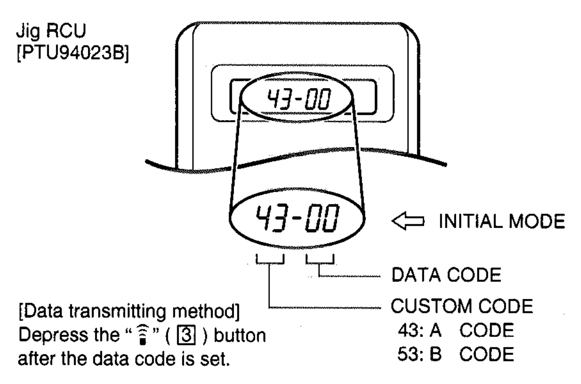

White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
V
U
White 100%
Black

Fig.3-1-2 PAL colour bar pattern

3.1.4 Switch settings and standard precautions

The SW settings of the VCR and the standard precautions for the electrical adjustments are as follows.

- *When using the Jig RCU, set its custom code to match the custom code of the VCR.*


Jig RCU
[PTU94023B]
43-00
43-00
INITIAL MODE
DATA CODE
CUSTOM CODE
43: A CODE
53: B CODE

[Data transmitting method]
Depress the "ᯤ" (3) button after the data code is set.

Fig. 3-1-3 Jig RCU

- *Set the switches as shown below unless otherwise specified on the relevant adjustment chart. The switches that are not listed below can be set as desired.*

B.E.S.T. (D.S.P.C.)	OFF
PICTURE CONTROL(SMART PICTURE)	NORMAL (NATURAL)

- *Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.*

3.2 SERVO CIRCUIT

3.2.1 Switching point

Signal	(A)	• Alignment tape [MHPE]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• VIDEO OUT terminal • TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)/slope : –
Adjustment part	(F)	• Jig RCU: Code "5A"
Specified value	(G)	• 6.5 ± 0.5H [MHP]
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Play back the stairstep signal of the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E) to observe the VIDEO OUT waveform and V.PB FM waveform at the measuring points (D1) and (D2).
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. (This also brings tracking to the centre.)
(4) Adjust tracking by pressing the channel buttons (+, –) so that the V.PB FM waveform becomes maximum.
(5) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(6) Play back the alignment tape (A) again, confirm that the switching point is the specified value (G).

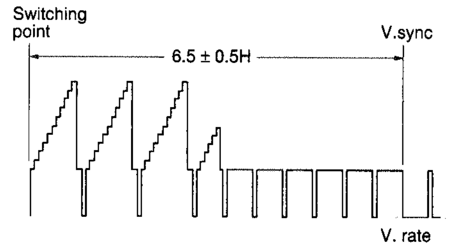


Fig. 3-2-1 Switching point

3.2.2 Slow tracking preset

Signal	(A)	• Ext. input • Colour bar signal
Mode	(B)	• REC (SP/LP) → Slow PB
Measuring point	(D)	• TV-Monitor
Adjustment part	(F)	• Jig RCU: Code "71" or "72"
Specified value	(G)	• Minimum noise
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Record the colour bar signal in the SP mode, and play back the recorded signal.
(2) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. (This also brings tracking to the centre.)
(3) Set the VCR to the FWD slow mode.
(4) Transmit the code (F) from the Jig RCU to adjust so that the noise bar becomes the specified value (G) on the TV monitor in the slow mode.
(5) Set the VCR to the Stop mode.
(6) Confirm that the noise bar is (G) on the TV monitor in the slow mode.
(7) Repeat steps (3) to (6) in the REV slow mode.
(8) Repeat steps (1) to (7) in the LP mode.

Note: • *For FWD slow playback, transmit the "08" code from the Jig RCU to enter the slow playback mode, and transmit the "D0" code for REV slow mode.*

3.3 VIDEO CIRCUIT

3.3.1 AUTO PICTURE initial setting

Signal	(A)	• Ext. input • Video: Optional
Mode	(B)	• EE → Auto adjust (SP/LP REC → PB)
Adjustment part	(F)	• Jig RCU : Code "58"
Specified value	(G)	• STOP mode
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Insert the VHS cassette tape.
(2) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed. When the VCR enters the eject mode, repeat steps (1) to (2) again.

3.4 SYSCON CIRCUIT [HR-J670EU/HR-J770EU]

Note: • *When perform this adjustment, remove the Mechanism assembly.*

3.4.1 Timer clock

Signal	(A)	• No signal
Mode	(B)	• EE
Equipment	(C)	• Frequency counter
Measuring point Short point	(D1) (D2) (D3)	• IC3001 pin61 • IC3001 pin24 • C3026 + and –
Adjustment part	(F)	• C3025 (TIMER CLOCK)
Specified value	(G)	• 1024.008 ± 0.001 Hz (976.5549 ± 0.0010 μsec)

(1) Connect the frequency counter to the measuring point (D1).
(2) Connect the short wire between the short point (D2) and Vcc (5V).
(3) Short the leads of capacitor (D3) once in order to reset the microprocessor of the SYSCON.
(4) Disconnect the short wire between the short point (D2) and Vcc then connect it again.
(5) Adjust the Adjustment part (F) so that the output frequency becomes the specified value (G).

SECTION 4
CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

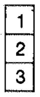
1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in µF, (P: PF).
3) All inductance values are in µH, (m: mH).
4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

2. Indications of control voltage

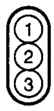
AUX : Active at high

$\overline{\text{AUX}}$ or AUX(L) : Active at low

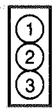
3. Interpreting Connector indications



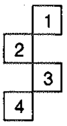
Removable connector



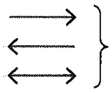
Wire soldered directly on board



Non-removable Board connector



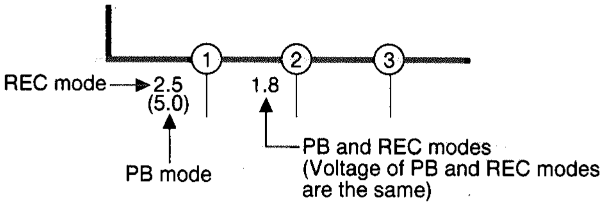
Board to Board



Connected pattern on board
The arrows indicate signal path

4. Voltage measurement

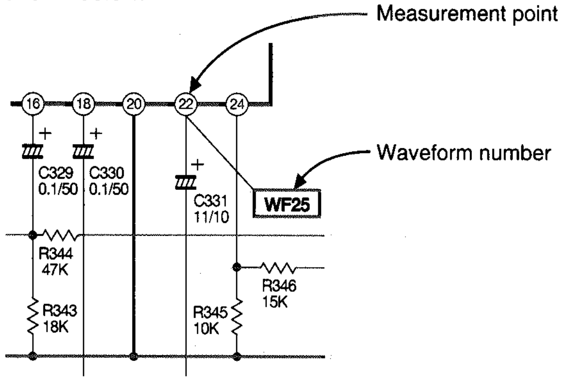
1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
   — : Unmeasurable or unnecessary to measure
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
4) Indication on schematic diagram
   Voltage Indications for REC and PB mode on the schematic diagram are as shown below.


REC mode
2.5
(5.0)
1.8
1
2
3
PB mode
PB and REC modes
(Voltage of PB and REC modes are the same)

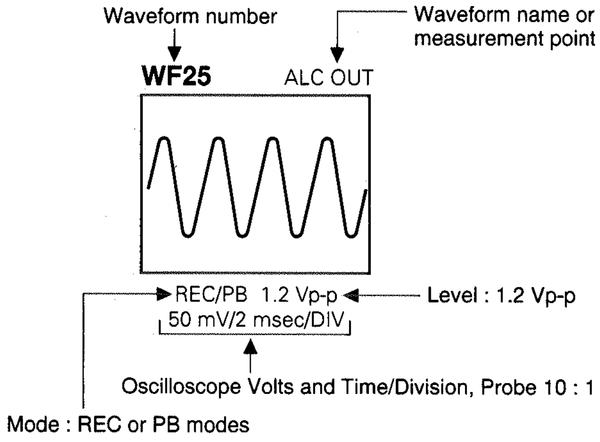
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test chatrs in the E-E mode
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.


Measurement point
16
18
20
22
24
Waveform number
C329
0.1/50
C330
0.1/50
C331
11/10
WF25
R344
47K
R346
15K
R343
18K
R345
10K

5) Waveform indications


Waveform number
Waveform name or measurement point
WF25
ALC OUT
REC/PB 1.2 Vp-p
Level : 1.2 Vp-p
50 mV/2 msec/DIV
Oscilloscope Volts and Time/Division, Probe 10 : 1
Mode : REC or PB modes

6. Signal path Symbols

The arrows indicate the signal path as follows.

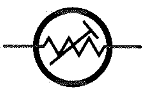
⇨	Playback signal path
➡	Playback and recording signal path
➡	Recording signal path (including E-E signal path)
⇨▷	Capstan servo path
➡▶	Drum servo path

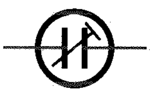
(Example)

⇨ R-Y	Playback R-Y signal path
➡ Y	Recording Y signal path

7. Indication of the parts for adjustments

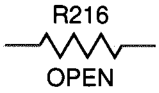
The parts for the adjustments are surrounded with the circle as shown below.





8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.



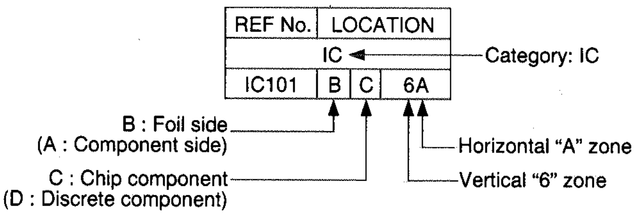
CIRCUIT BOARD NOTES

1. Foil and Component sides

1) Foil side (B side) :
   Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
   Parts on the component side seen from component face (parts face) indicated.

2. Parts location guides

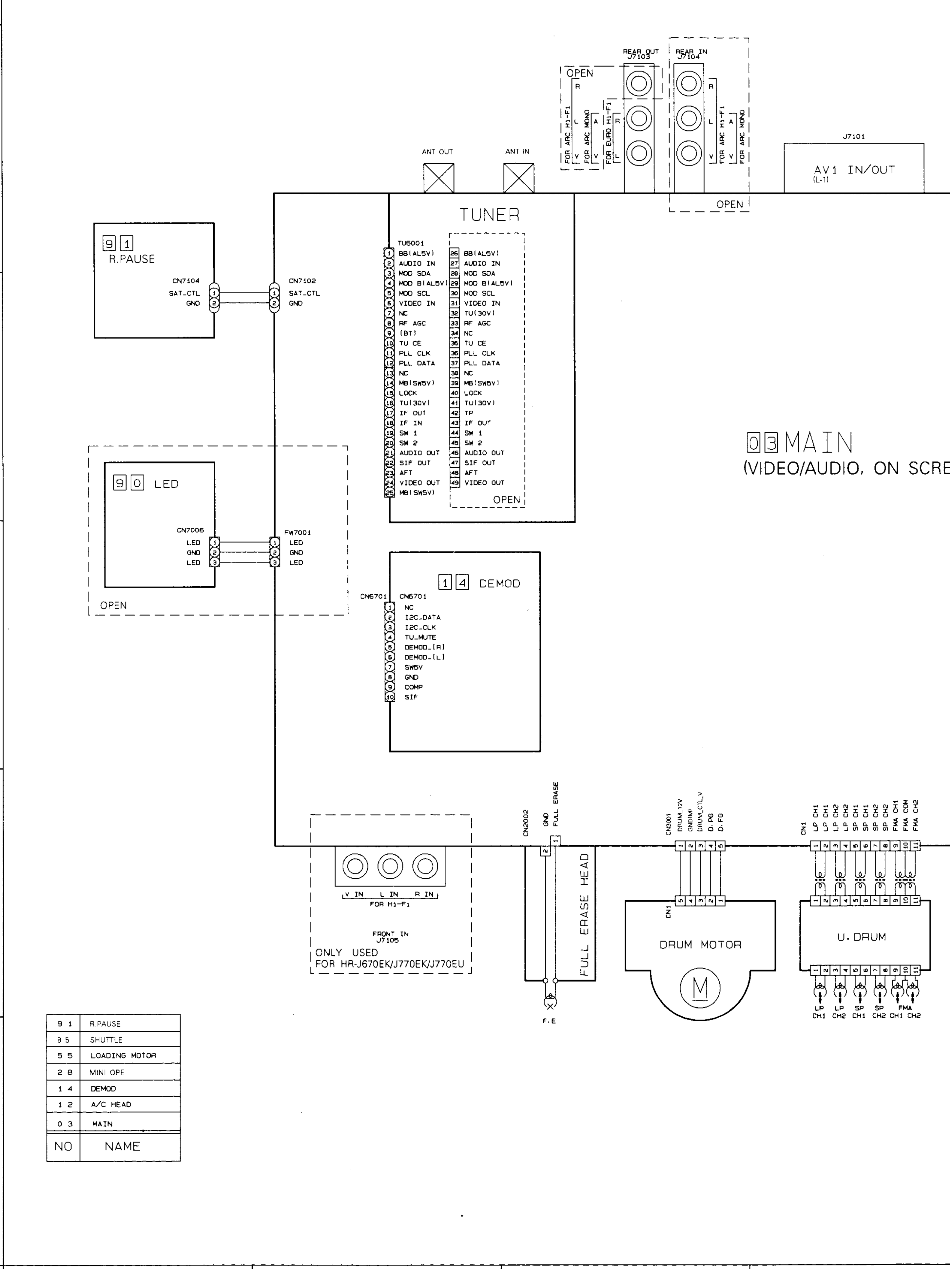
Parts location are indicated by guide scale on the circuit board.


REF No.
LOCATION
IC
IC101
B
C
6A
Category: IC
B : Foil side
(A : Component side)
C : Chip component
(D : Discrete component)
Horizontal "A" zone
Vertical "6" zone

Note:

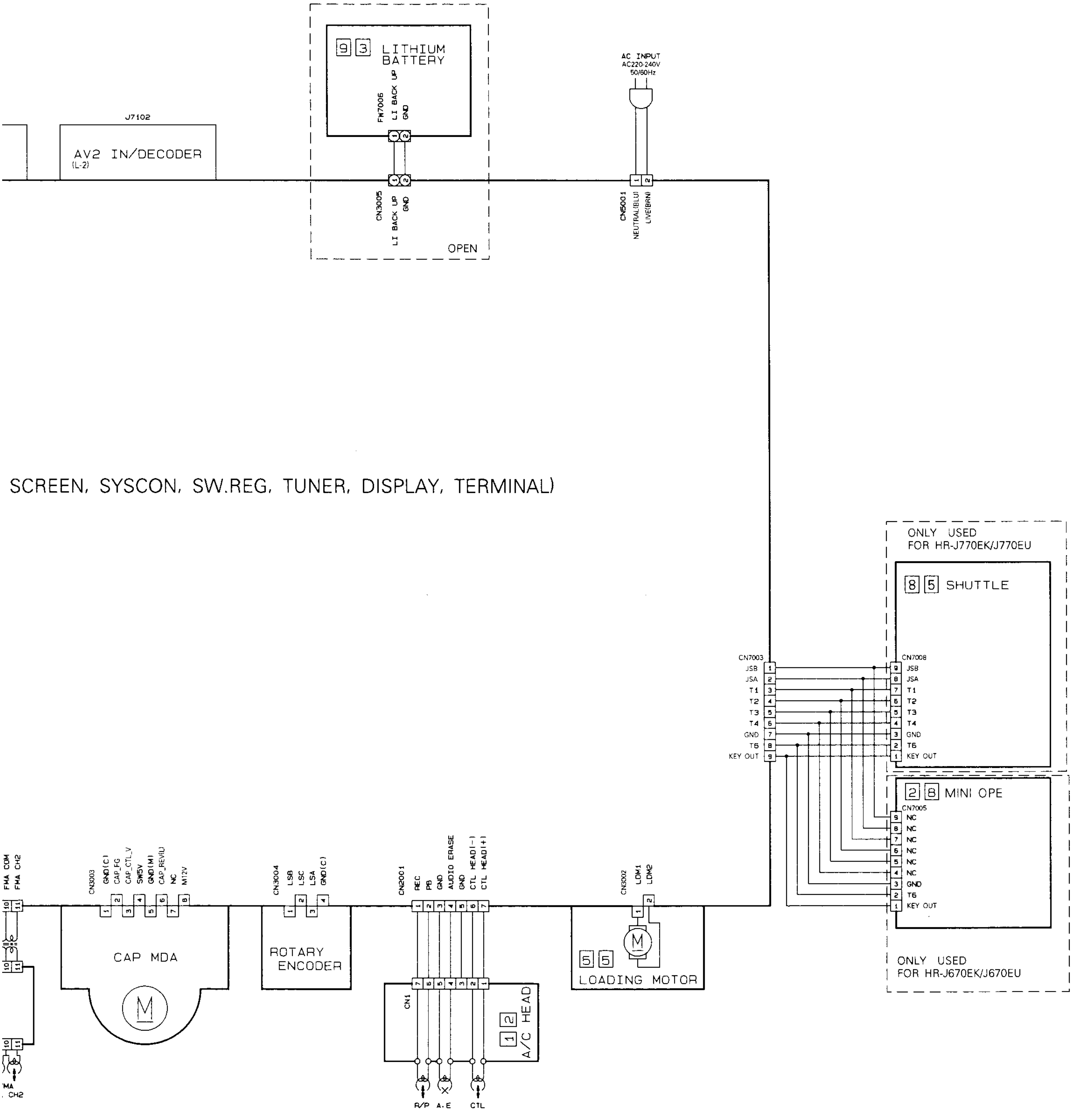
For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

4.1 BOARD INTERCONNECTIONS

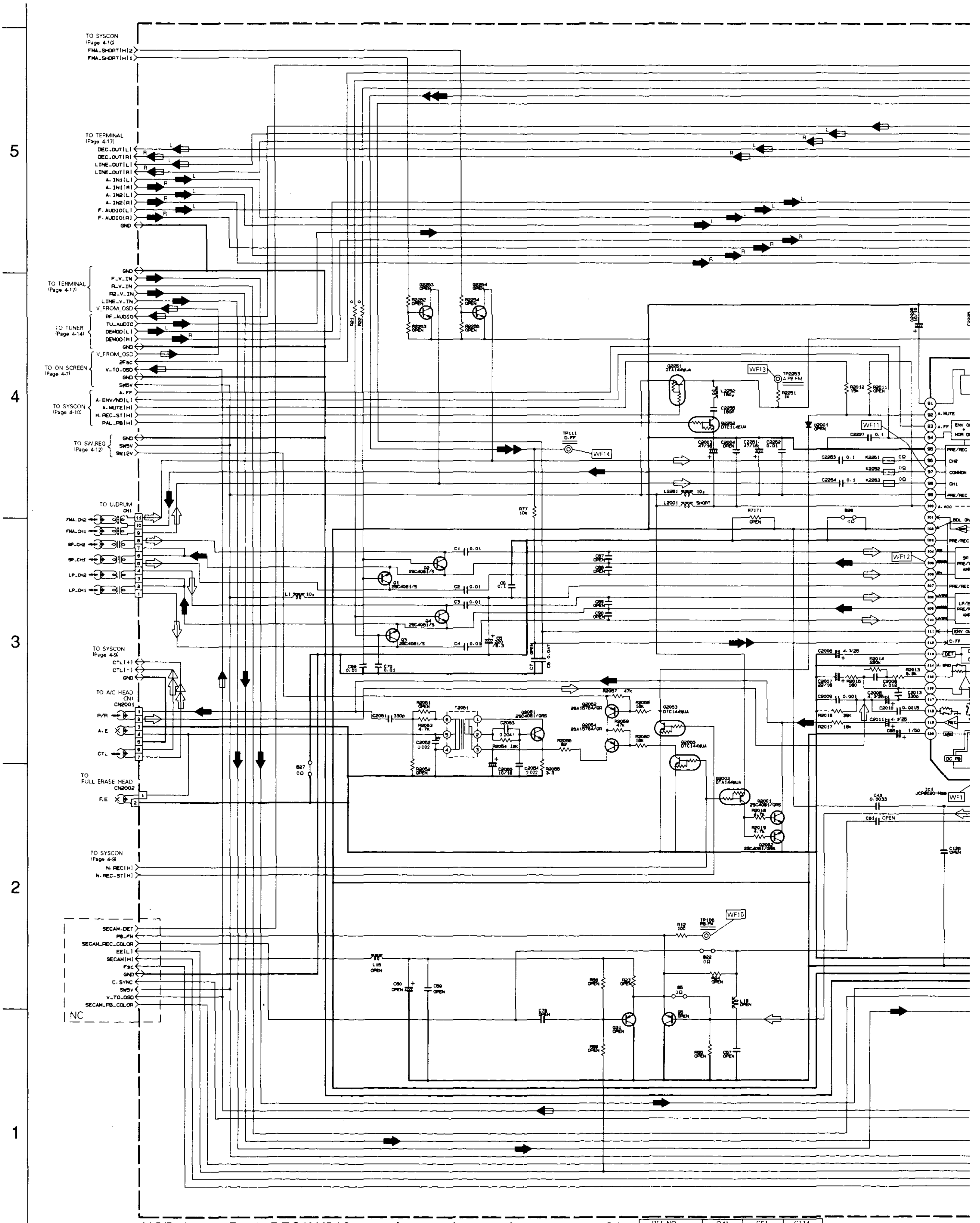


5
4
3
2
1
REAR OUT
J7103
REAR IN
J7104
OPEN
FOR ARC H1-F1
FOR ARC MONO
FOR EURO H1-F1
R
L
A
V
FOR ARC H1-F1
FOR ARC MONO
OPEN
J7101
AV1 IN/OUT
(L-1)
ANT OUT
ANT IN
TUNER
TU6001
1 BB(AL5V)
2 AUDIO IN
3 MOD SDA
4 MOD B(AL5V)
5 MOD SCL
6 VIDEO IN
7 NC
8 RF AGC
9 (BT)
10 TU CE
11 PLL CLK
12 PLL DATA
13 NC
14 MB(SW5V)
15 LOCK
16 TU(30V)
17 IF OUT
18 IF IN
19 SW 1
20 SW 2
21 AUDIO OUT
22 SIF OUT
23 AFT
24 VIDEO OUT
25 MB(SW5V)
26 BB(AL5V)
27 AUDIO IN
28 MOD SDA
29 MOD B(AL5V)
30 MOD SCL
31 VIDEO IN
32 TU(30V)
33 RF AGC
34 NC
35 TU CE
36 PLL CLK
37 PLL DATA
38 NC
39 MB(SW5V)
40 LOCK
41 TU(30V)
42 TP
43 IF OUT
44 SW 1
45 SW 2
46 AUDIO OUT
47 SIF OUT
48 AFT
49 VIDEO OUT
OPEN
9 1 R.PAUSE
CN7104
SAT_CTL
GND
CN7102
1 SAT_CTL
2 GND
0 3 MAIN
(VIDEO/AUDIO, ON SCRE
9 0 LED
CN7006
LED
GND
LED
FW7001
1 LED
2 GND
3 LED
OPEN
1 4 DEMOD
CN6701
CN6701
1 NC
2 I2C_DATA
3 I2C_CLK
4 TU_MUTE
5 DEMOD_(R)
6 DEMOD_(L)
7 SW5V
8 GND
9 COMP
10 SIF
V IN
L IN
R IN
FOR H1-F1
FRONT IN
J7105
ONLY USED
FOR HR-J670EK/J770EK/J770EU
CN2002
GND
FULL ERASE
FULL ERASE HEAD
F.E
CN3001
DRUM_12V
GND(M)
DRUM_CTL_V
D.PG
D.FG
CN1
DRUM MOTOR
M
CN1
LP CH1
LP CH1
LP CH2
LP CH2
SP CH1
SP CH1
SP CH2
SP CH2
FMA CH1
FMA COM
FMA CH2
U.DRUM
LP CH1
LP CH2
SP CH1
SP CH2
FMA CH1 CH2
A
B
C
D

NO	NAME
9 1	R.PAUSE
8 5	SHUTTLE
5 5	LOADING MOTOR
2 8	MINI OPE
1 4	DEMOD
1 2	A/C HEAD
0 3	MAIN


J7102
AV2 IN/DECODER
(L-2)
9 3 LITHIUM BATTERY
FW7006
LI BACK UP
GND
CN3005
LI BACK UP
GND
OPEN
AC INPUT
AC220-240V
50/60Hz
CN5001
NEUTRAL(BLU)
LIVE(BRN)
SCREEN, SYSCON, SW.REG, TUNER, DISPLAY, TERMINAL)
ONLY USED FOR HR-J770EK/J770EU
8 5 SHUTTLE
CN7003
JSB
JSA
T1
T2
T3
T4
GND
T5
KEY OUT
CN7008
JSB
JSA
T1
T2
T3
T4
GND
T5
KEY OUT
2 8 MINI OPE
CN7005
NC
NC
NC
NC
NC
NC
GND
T5
KEY OUT
ONLY USED FOR HR-J670EK/J670EU
FMA COM
FMA CH2
CN3003
GND(C)
CAP_FG
CAP_CTL_V
SW5V
GND(M)
CAP_REV(L)
NC
M12V
CAP MDA
M
CN3004
LSB
LSC
LSA
GND(C)
ROTARY ENCODER
CN2001
REC
PB
GND
AUDIO ERASE
GND
CTL HEAD(-)
CTL HEAD(+)
CN1
1 2 A/C HEAD
R/P
A.E
CTL
CN3002
LDM1
LDM2
M
5 5 LOADING MOTOR
FMA
CH2

4.2 VIDEO/AUDIO SCHEMATIC DIAGRAM


5
4
3
2
1
TO SYSCON (Page 4-10)
FMA_SHORT(H)2
FMA_SHORT(H)1
TO TERMINAL (Page 4-17)
DEC_OUT(L)
DEC_OUT(R)
LINE_OUT(L)
LINE_OUT(R)
A.IN1(L)
A.IN1(R)
A.IN2(L)
A.IN2(R)
F.AUDIO(L)
F.AUDIO(R)
GND
TO TERMINAL (Page 4-17)
GND
F_V_IN
R_V_IN
R2_V_IN
LINE_V_IN
V_FROM_OSD
TO TUNER (Page 4-14)
RF_AUDIO
TU_AUDIO
DEMOD(L)
DEMOD(R)
GND
TO ON SCREEN (Page 4-7)
V_FROM_OSD
2Fsc
V_TO_OSD
GND
SW5V
TO SYSCON (Page 4-10)
A.FF
A.ENV/NOI(L)
A.MUTE(H)
H.REC_ST(H)
PAL_PB(H)
TO SW.REG (Page 4-12)
GND
SW5V
SW12V
TO U.DRUM CN1
FMA_CH2
FMA_CH1
SP_CH2
SP_CH1
LP_CH2
LP_CH1
TO SYSCON (Page 4-9)
CTL(+)
CTL(-)
GND
TO A/C HEAD CN1 CN2001
P/R
A.E
CTL
TO FULL ERASE HEAD CN2002
F.E
TO SYSCON (Page 4-9)
N.REC(H)
N.REC_ST(H)
SECAM_DET
PB_FM
SECAM_REC_COLOR
EE(L)
SECAM(H)
Fsc
GND
C.SYNC
SW5V
V_TO_OSD
SECAM_PB_COLOR
NC
WF11
WF12
WF13
WF14
WF15
WF1
TP111 D.FF
TP2253 A PB FM
TP106 PB FM
Q1 2SC4081/S
Q2 2SC4081/S
Q3 2SC4081/S
Q4 2SC4081/S
T2051
Q2051 2SC4081/QRS
Q2052 2SA1576A/QR
Q2054 2SA1576A/QR
Q2053 DTC144WUA
Q2055 DTC144WUA
Q2003 DTA144WUA
Q2251 DTA144WUA
Q2252 DTC114EUA
Q2001 2SC4081/QRS
Q2002 2SC4081/QRS
Q31
Q5
IC1 JCP8020-488
A.MUTE
A.FF
PRE/REC
CH2
COMMON
CH1
A.VCC
DET
L
R

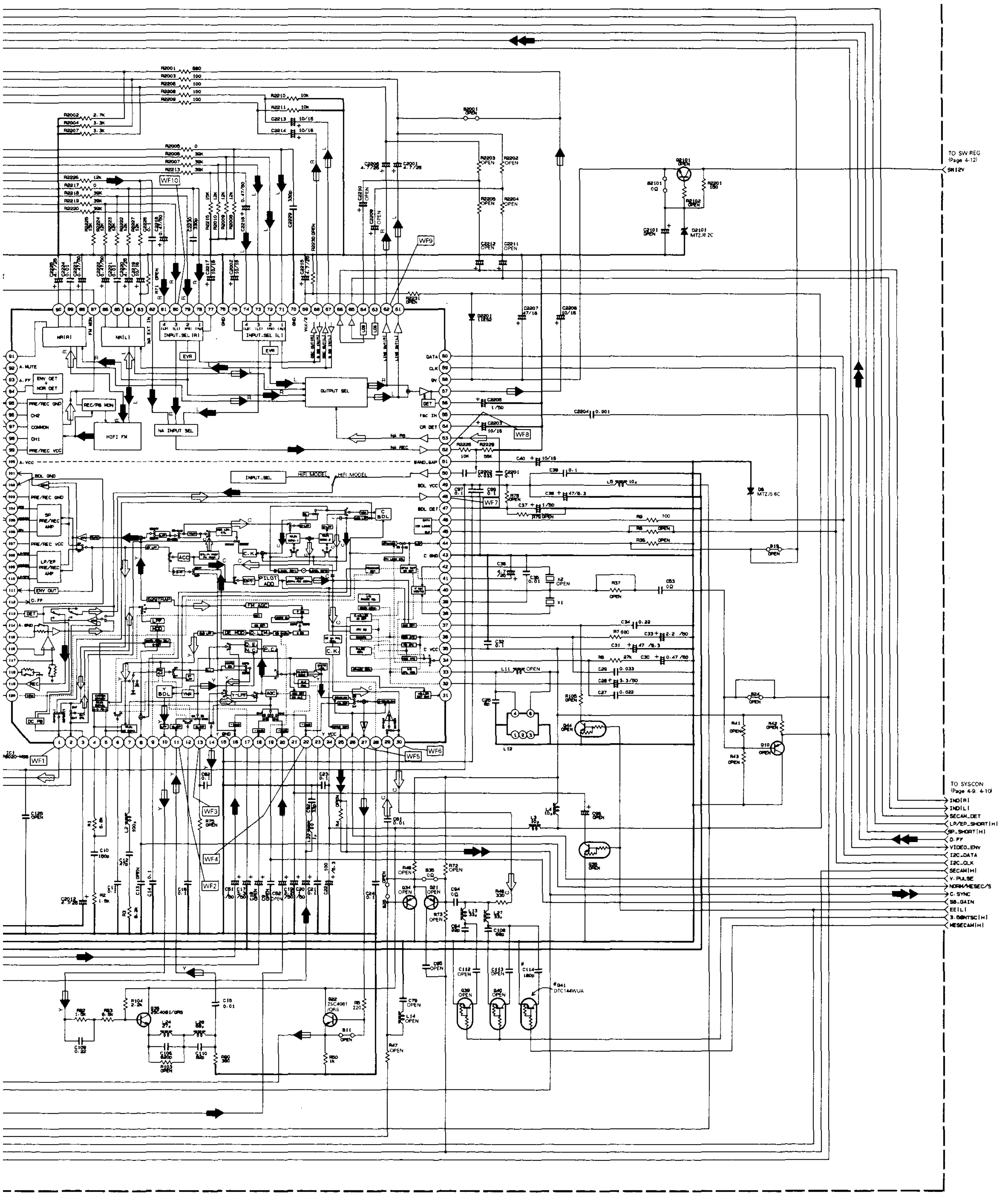
NOTES : 1. For VIDEO/AUDIO waveforms, please refer to page 4-24.
2. Comparison chart of models & marks(#).

REF NO.	Q41	C51	C114
HR-J670EU	USED	NOT USED	USED
HR-J770EU	USED	USED	USED
HR-J670EK/J770EK	NOT USED	USED	NOT USED

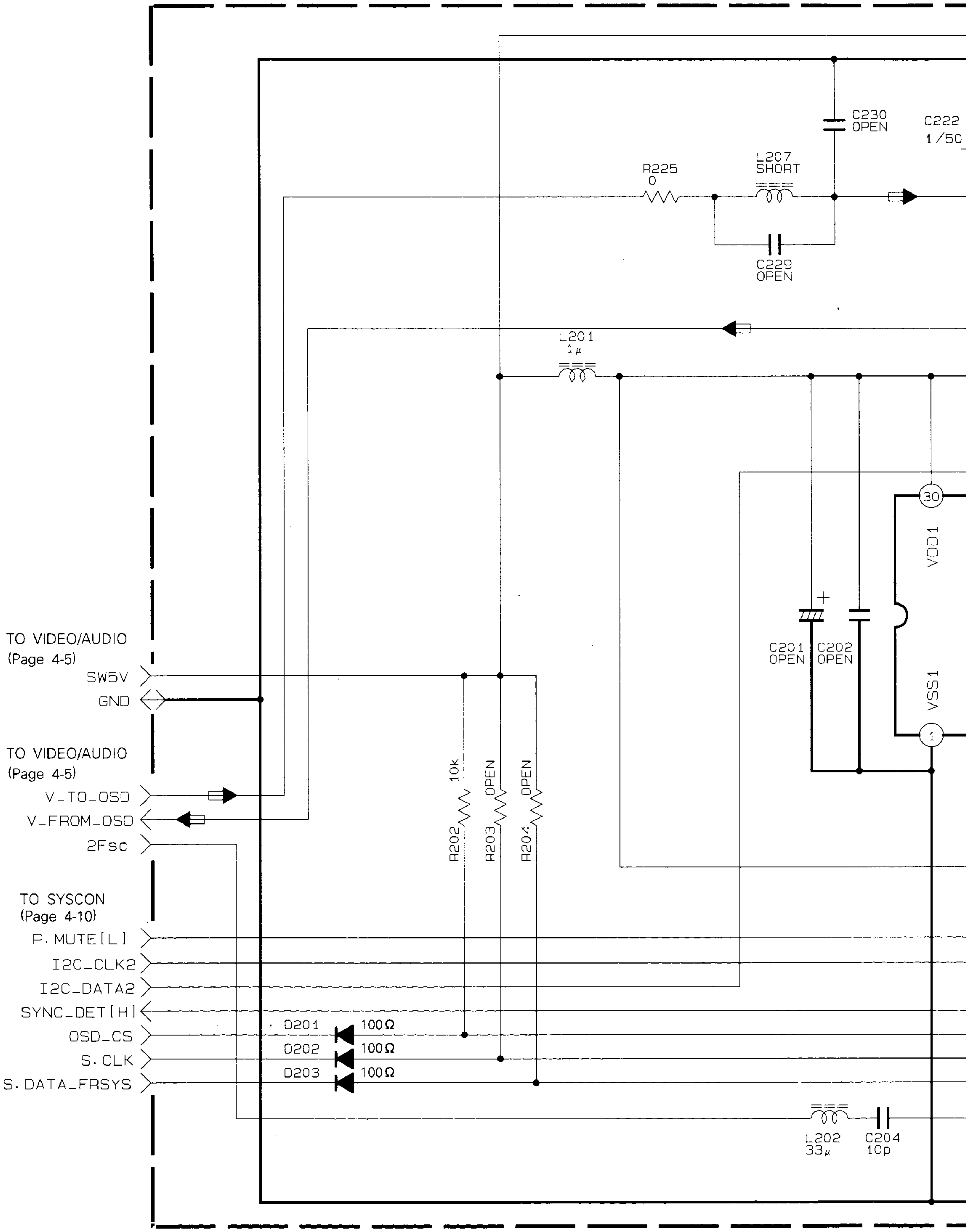
A B C D

NOTE : *When ordering parts, be sure to order according to the Part Number indicated in the Parts List.*

03 MAIN (VIDEO/AUDIO)

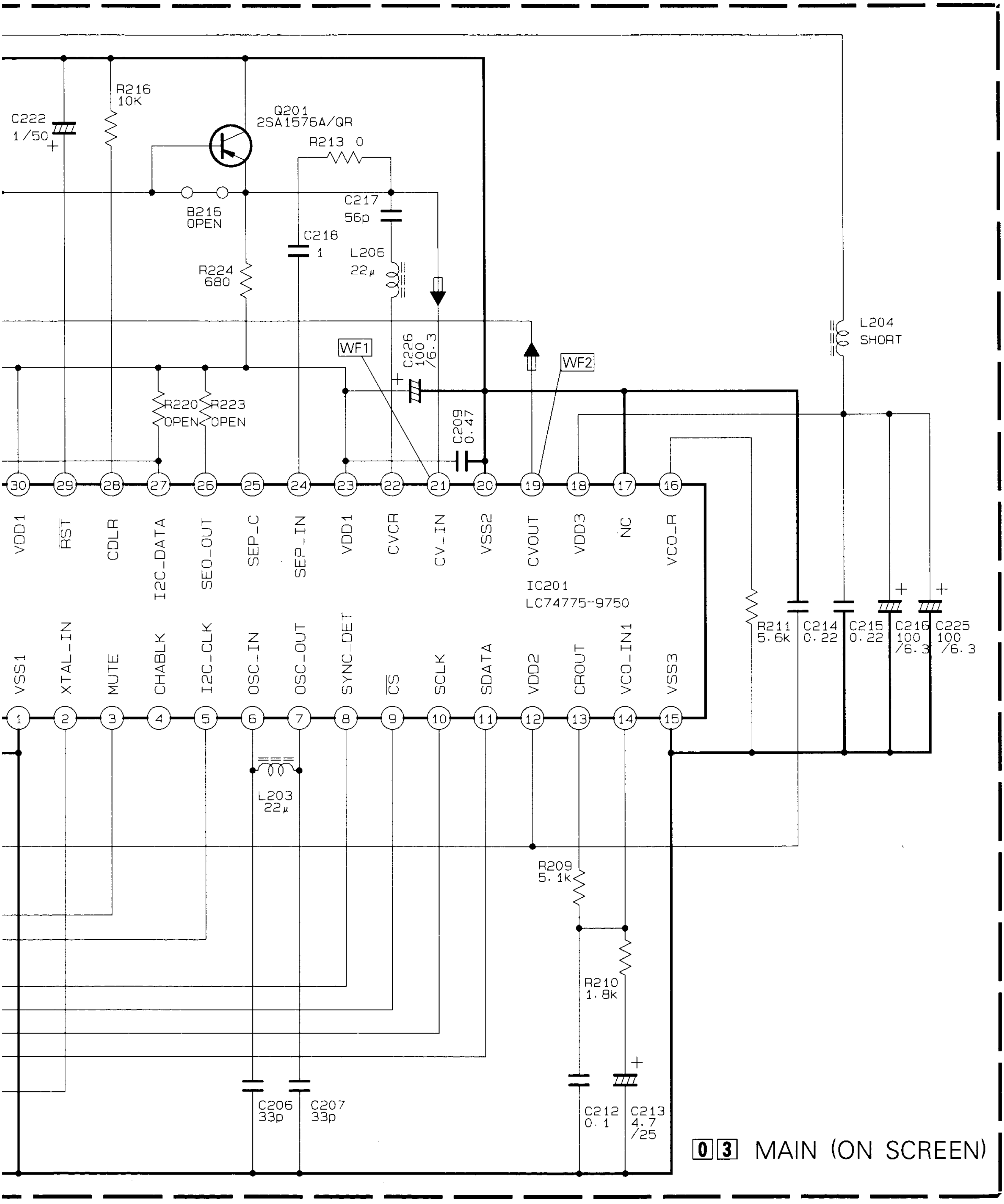

TO SW REG
(Page 4-12)
SW12V
Q2101
D2101
MTZJ8.2C
TO SYSCON
(Page 4-9, 4-10)
IND(R)
IND(L)
SECAM_DET
LP/EP_SHORT(H)
SP_SHORT(H)
D.FF
VIDEO_ENV
I2C_DATA
I2C_CLK
SECAM(H)
V.PULSE
NORM/MESEC/S
C.SYNC
SB.GAIN
EE(L)
3.58NTSC(H)
MESECAM(H)
IC1
WF1
WF2
WF3
WF4
WF5
WF6
WF7
WF8
WF9
WF10
NR(R)
NR(L)
INPUT SEL (R)
INPUT SEL (L)
EVR
OUTPUT SEL
DET
HIFI FM
NA INPUT SEL
REC/PB MON
ENV DET
NOR DET
PRE/REC GND
CH2
COMMON
CH1
PRE/REC VCC
A.MUTE
A.FF
A.VCC
INPUT_SEL
HIFI MODEL
BDL GND
BDL VCC
BDL DET
SP PRE/REC AMP
LP/EP PRE/REC AMP
ENV OUT
D.FF
ACC
PILOT ADD
C.K
FM AGC
DE MOD
BDL
Y-LPF
AGC
DATA
CLK
5V
FSC IN
CR DET
NA PB
NA REC
BAND_GAP
C GND
C VCC
Y GND
Y VCC
DC PB
REC
X1
X2
L11
L12
Q10
Q21
Q22
2SC4081/QRS
Q34
Q38
Q39
Q40
Q41
DTC144WUA
Q44
D8
MTZJ5.6C
D2201

4.3 ON SCREEN SCHEMATIC DIAGRAM


TO VIDEO/AUDIO
(Page 4-5)
SW5V
GND
TO VIDEO/AUDIO
(Page 4-5)
V_TO_OSD
V_FROM_OSD
2Fsc
TO SYSCON
(Page 4-10)
P. MUTE[L]
I2C_CLK2
I2C_DATA2
SYNC_DET[H]
OSD_CS
S. CLK
S. DATA_FRSYS
D201
100Ω
D202
100Ω
D203
100Ω
R202
10k
R203
OPEN
R204
OPEN
R225
0
L207
SHORT
C230
OPEN
C222
1/50
C229
OPEN
L201
1μ
C201
OPEN
C202
OPEN
30
VDD1
VSS1
1
L202
33μ
C204
10p
5
4
3
2
1
A
B
C
D

NOTE : For ON SCREEN waveforms, please refer to page 4-24.

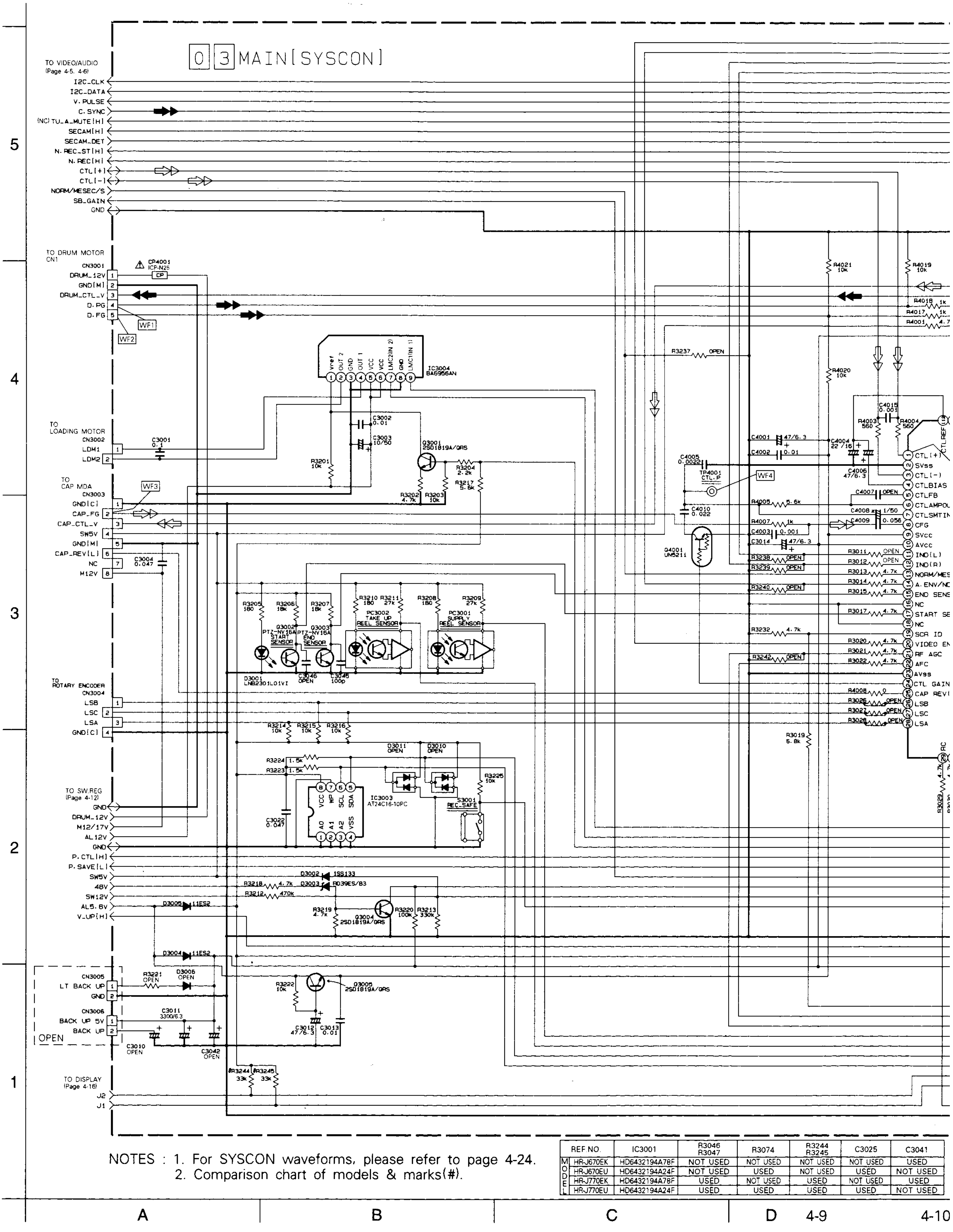
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



C222
1/50
R216
10K
Q201
2SA1576A/QR
R213 0
B216
OPEN
C217
56p
C218
1
L206
22μ
R224
680
WF1
C226
100
/6.3
WF2
L204
SHORT
R220
OPEN
R223
OPEN
C209
0.47
VDD1
RST
CDLR
I2C_DATA
SEO_OUT
SEP_C
SEP_IN
VDD1
CVCR
CV_IN
VSS2
CVOUT
VDD3
NC
VCO_R
IC201
LC74775-9750
VSS1
XTAL_IN
MUTE
CHABLK
I2C_CLK
OSC_IN
OSC_OUT
SYNC_DET
CS
SCLK
SDATA
VDD2
CROUT
VCO_IN1
VSS3
R211
5.6k
C214
0.22
C215
0.22
C216
100
/6.3
C225
100
/6.3
L203
22μ
R209
5.1k
R210
1.8k
C206
33p
C207
33p
C212
0.1
C213
4.7
/25

03 MAIN (ON SCREEN)

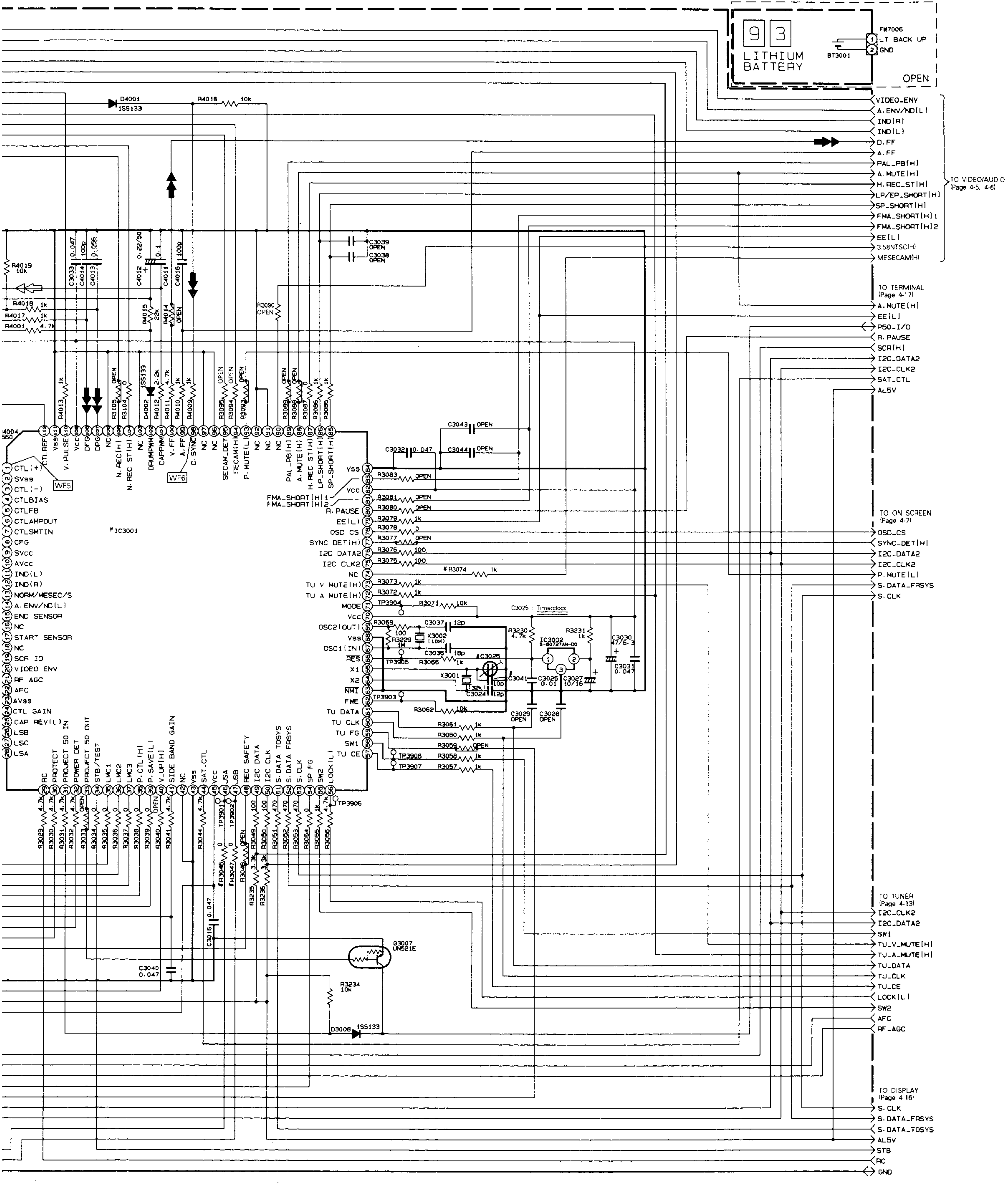
4.4 SYSTEM CONTROL SCHEMATIC DIAGRAM


03 MAIN[SYSCON]
TO VIDEO/AUDIO (Page 4-5, 4-6)
I2C_CLK
I2C_DATA
V. PULSE
C. SYNC
(NC) TU_A_MUTE[H]
SECAM[H]
SECAM_DET
N. REC_ST[H]
N. REC[H]
CTL[+]
CTL[-]
NORM/MESEC/S
SB_GAIN
GND
TO DRUM MOTOR CN1
CN3001
DRUM_12V
GND[M]
DRUM_CTL_V
D. PG
D. FG
WF1
WF2
CP4001 ICP-N25
TO LOADING MOTOR
CN3002
LDM1
LDM2
TO CAP MDA
CN3003
GND[C]
CAP_FG
CAP_CTL_V
SW5V
GND[M]
CAP_REV[L]
NC
M12V
WF3
TO ROTARY ENCODER
CN3004
LSB
LSC
LSA
GND[C]
TO SW.REG (Page 4-12)
GND
DRUM_12V
M12/17V
AL12V
GND
P. CTL[H]
P. SAVE[L]
SW5V
48V
SW12V
AL5. 8V
V_UP[H]
CN3005
LT BACK UP
GND
CN3006
BACK UP 5V
BACK UP
OPEN
TO DISPLAY (Page 4-16)
J2
J1
IC3004 BA6956AN
Vref OUT 2 GND OUT 1 VCC VCC LMC2(IN 2) GND LMC1(IN 1)
C3001 0.1
C3002 0.01
C3003 10/50
Q3001 2SD1819A/QRS
R3201 10k
R3202 4.7k
R3203 10k
R3204 2.2k
R3217 5.6k
C3004 0.047
R3205 180
R3206 18k
R3207 18k
Q3002 PTZ-NV16A START SENSOR
Q3003 PTZ-NV16A END SENSOR
R3210 180
R3211 27k
PC3002 TAKE UP REEL SENSOR
R3208 180
R3209 27k
PC3001 SUPPLY REEL SENSOR
D3001 LNB2301L01VI
C3046 OPEN
C3045 100p
R3214 10k
R3215 10k
R3216 10k
D3011 OPEN
D3010 OPEN
R3224 1.5k
R3223 1.5k
IC3003 AT24C16-10PC
VCC WP SCL SDA
A0 A1 A2 VSS
C3022 0.047
R3225 10k
S3001 REC_SAFE
D3002 1SS133
D3003 RD39ES/B3
R3218 4.7k
R3212 470k
R3219 4.7k
Q3004 2SD1819A/QRS
R3220 100k
R3213 330k
D3005 11ES2
D3004 11ES2
R3221 OPEN
D3006 OPEN
C3011 3300/6.3
C3010 OPEN
C3042 OPEN
R3222 10k
Q3005 2SD1819A/QRS
C3012 47/6.3
C3013 0.01
#R3244 33k
#R3245 33k
R3237 OPEN
R4021 10k
R4020 10k
R4019 10k
R4018 1k
R4017 1k
R4001 4.7
C4015 0.001
R4003 560
R4004 560
C4001 47/6.3
C4002 0.01
C4004 22/16
C4005 0.0022
TP4001 CTL.P
WF4
C4006 47/6.3
C4007 OPEN
R4005 5.6k
C4010 0.022
C4008 1/50
C4009 0.056
R4007 1k
C4003 0.001
C3014 47/6.3
Q4001 UN5211
R3238 OPEN
R3239 OPEN
R3240 OPEN
R3232 4.7k
R3242 OPEN
R3011 OPEN
R3012 OPEN
R3013 4.7k
R3014 4.7k
R3015 4.7k
R3017 4.7k
R3020 4.7k
R3021 4.7k
R3022 4.7k
R4008 0
R3026 OPEN
R3027 OPEN
R3028 OPEN
R3019 5.6k
R3029 4.7k
CTL(+)
SVSS
CTL(-)
CTLBIAS
CTLFB
CTLAMPOU
CTLSMTIN
CFG
SVCC
AVCC
IND(L)
IND(R)
NORM/MES
A. ENV/NC
END SENS
NC
START SE
NC
SCR ID
VIDEO EN
RF AGC
AFC
AVSS
CTL GAIN
CAP REV
LSB
LSC
LSA
RC
CTL REF
1
2
3
4
5
A
B
C
D

NOTES : 1. For SYSCON waveforms, please refer to page 4-24.
2. Comparison chart of models & marks(#).

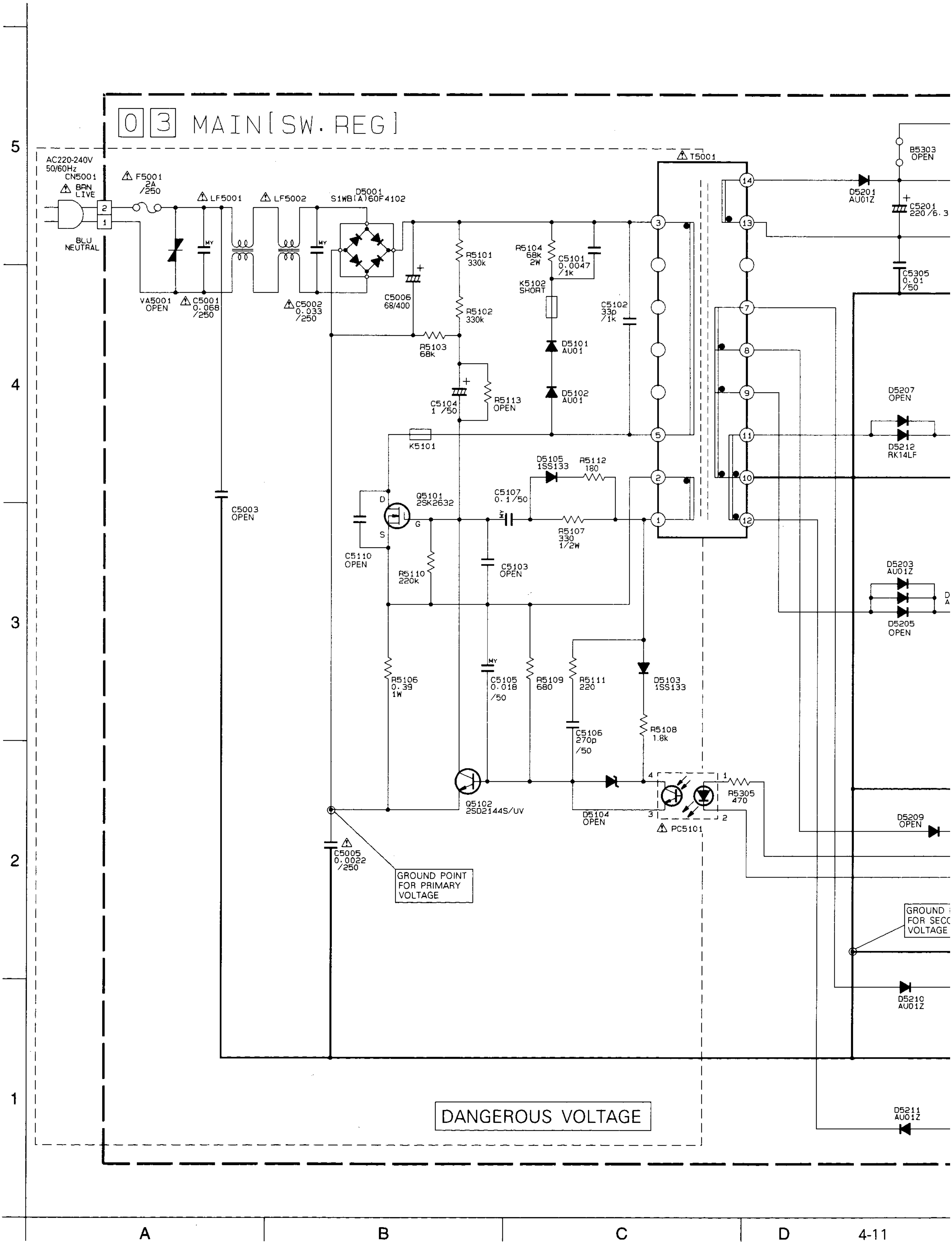
REF NO.		IC3001	R3046 R3047	R3074	R3244 R3245	C3025	C3041
MODEL	HR-J670EK	HD6432194A78F	NOT USED	NOT USED	NOT USED	NOT USED	USED
	HR-J670EU	HD6432194A24F	NOT USED	USED	NOT USED	USED	NOT USED
	HR-J770EK	HD6432194A78F	USED	NOT USED	USED	NOT USED	USED
	HR-J770EU	HD6432194A24F	USED	USED	USED	USED	NOT USED

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

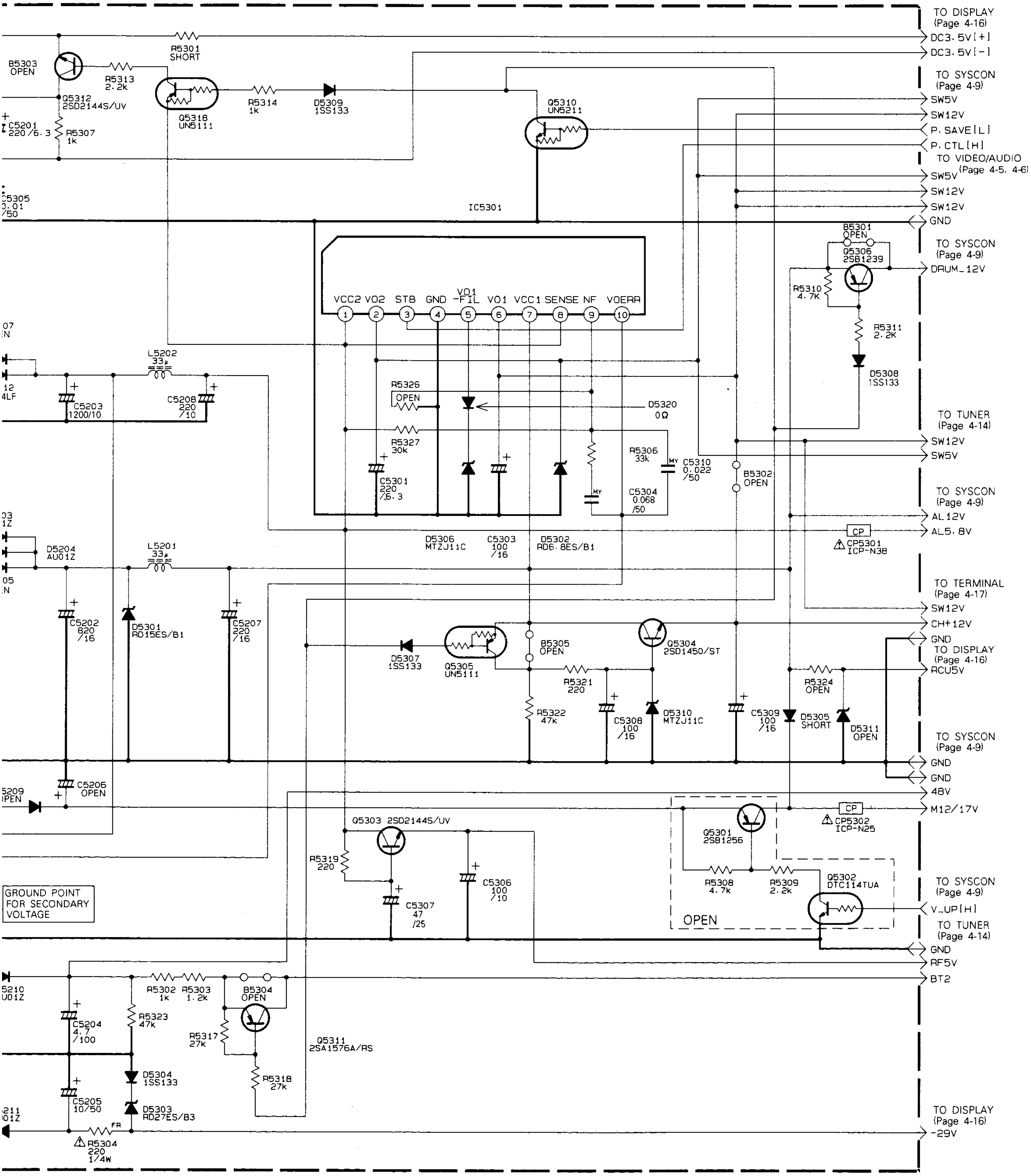

LITHIUM BATTERY
BT3001
FW7006
LT BACK UP
GND
OPEN
VIDEO_ENV
A.ENV/ND(L)
IND(R)
IND(L)
D.FF
A.FF
PAL_PB(H)
A.MUTE(H)
H.REC_ST(H)
LP/EP_SHORT(H)
SP_SHORT(H)
FMA_SHORT(H)1
FMA_SHORT(H)2
EE(L)
3.58NTSC(H)
MESECAM(H)
TO VIDEO/AUDIO (Page 4-5, 4-6)
TO TERMINAL (Page 4-17)
A.MUTE(H)
EE(L)
P50_I/O
R.PAUSE
SCR(H)
I2C_DATA2
I2C_CLK2
SAT_CTL
AL5V
TO ON SCREEN (Page 4-7)
OSD_CS
SYNC_DET(H)
I2C_DATA2
I2C_CLK2
P.MUTE(L)
S.DATA_FRSYS
S.CLK
TO TUNER (Page 4-13)
I2C_CLK2
I2C_DATA2
SW1
TU_V_MUTE(H)
TU_A_MUTE(H)
TU_DATA
TU_CLK
TU_CE
LOCK(L)
SW2
AFC
RF_AGC
TO DISPLAY (Page 4-16)
S.CLK
S.DATA_FRSYS
S.DATA_TOSYS
AL5V
STB
RC
GND
D4001 1SS133
R4016 10k
R4019 10k
R4018 1k
R4017 1k
R4001 4.7k
C3033 0.047
C4014 100p
C4013 0.056
C4012 0.22/50
C4011 0.1
C4016 100p
R4015 22k
R4014 OPEN
C3039 OPEN
C3038 OPEN
R3090 OPEN
D4002 1SS133
#IC3001
CTL(+)
SVss
CTL(-)
CTLBIAS
CTLFB
CTLAMPOUT
CTLSMTIN
CFG
SVcc
AVcc
IND(L)
IND(R)
NORM/MESEC/S
A.ENV/ND(L)
END SENSOR
NC
START SENSOR
NC
SCR ID
VIDEO ENV
RF AGC
AFC
AVss
CTL GAIN
CAP REV(L)
LSB
LSC
LSA
WF5
WF6
CTL REF
Vss
V.PULSE
Vcc
DFG
DPG
NC
N.REC(H)
N.REC ST(H)
NC
DRUMPWM
CAPPWM
V.FF
A.FF
C.SYNC
NC
NC
SECAM_DET
SECAM(H)
P.MUTE(L)
NC
NC
NC
PAL_PB(H)
A.MUTE(H)
H.REC ST(H)
LP_SHORT(H)
SP_SHORT(H)
R4013 1k
R3105 OPEN
R3104 0
R4012 2.2k
R4011 4.7k
R4010 1k
R4009 1k
R3095 OPEN
R3094 OPEN
R3092 OPEN
R3089 OPEN
R3088 OPEN
R3087 0
R3086 1k
R3085 1k
C3043 OPEN
C3032 0.047
C3044 OPEN
Vss
R3083 OPEN
Vcc
FMA_SHORT(H)1
FMA_SHORT(H)2
R3081 OPEN
R3080 OPEN
R.PAUSE
EE(L)
R3079 1k
OSD CS
R3078 0
SYNC DET(H)
R3077 OPEN
I2C DATA2
R3076 100
I2C CLK2
R3075 100
NC
#R3074 1k
TU V MUTE(H)
R3073 1k
TU A MUTE(H)
R3072 1k
MODE
TP3904
R3071 10k
Vcc
C3025 : Timerclock
OSC2(OUT)
R3069 100
C3037 12p
Vss
R3229 1M
X3002 (10M)
OSC1(IN)
C3036 18p
RES
TP3905
R3066 1k
#C3025
X1
X3001
X2
(32k)
C3024 12p
10p
NMI
TP3903
FWE
R3062 10k
TU DATA
TU CLK
R3061 1k
TU FG
R3060 1k
SW1
R3059 OPEN
TU CE
TP3908
R3058 1k
TP3907
R3057 1k
R3230 4.7k
R3231 1k
IC3002 S-80727AN-00
C3030 47/6.3
C3031 0.047
C3041
C3026 0.01
C3027 10/16
C3029 OPEN
C3028 OPEN
RC
PROTECT
PROJECT 50 IN
POWER DET
PROJECT 50 OUT
STB/TEST
LMC1
LMC2
LMC3
P.CTL(H)
P.SAVE(L)
V_UP(H)
SIDE BAND GAIN
NC
Vss
SAT_CTL
Vcc
USA
USB
REC SAFETY
I2C DATA
I2C CLK
S.DATA TOSYS
S.DATA FRSYS
S.CLK
SP FG
SW2
LOCK(L)
TP3906
R3029 4.7k
R3030 4.7k
R3031 4.7k
R3032 4.7k
R3033 OPEN
R3034 0
R3035 0
R3036 0
R3037 0
R3038 0
R3039 0
R3040 OPEN
R3041 4.7k
R3044 4.7k
TP3901
TP3902
#R3046 0
#R3047 0
R3048 OPEN
R3049 100
R3050 100
R3051 470
R3052 470
R3053 470
R3054 1k
R3055 1k
R3056 4.7k
R3235 3.3k
R3236 3.3k
C3016 0.047
C3040 0.047
Q3007 UN521E
R3234 10k
D3008 1SS133

C3041
USED
OT USED
USED
OT USED

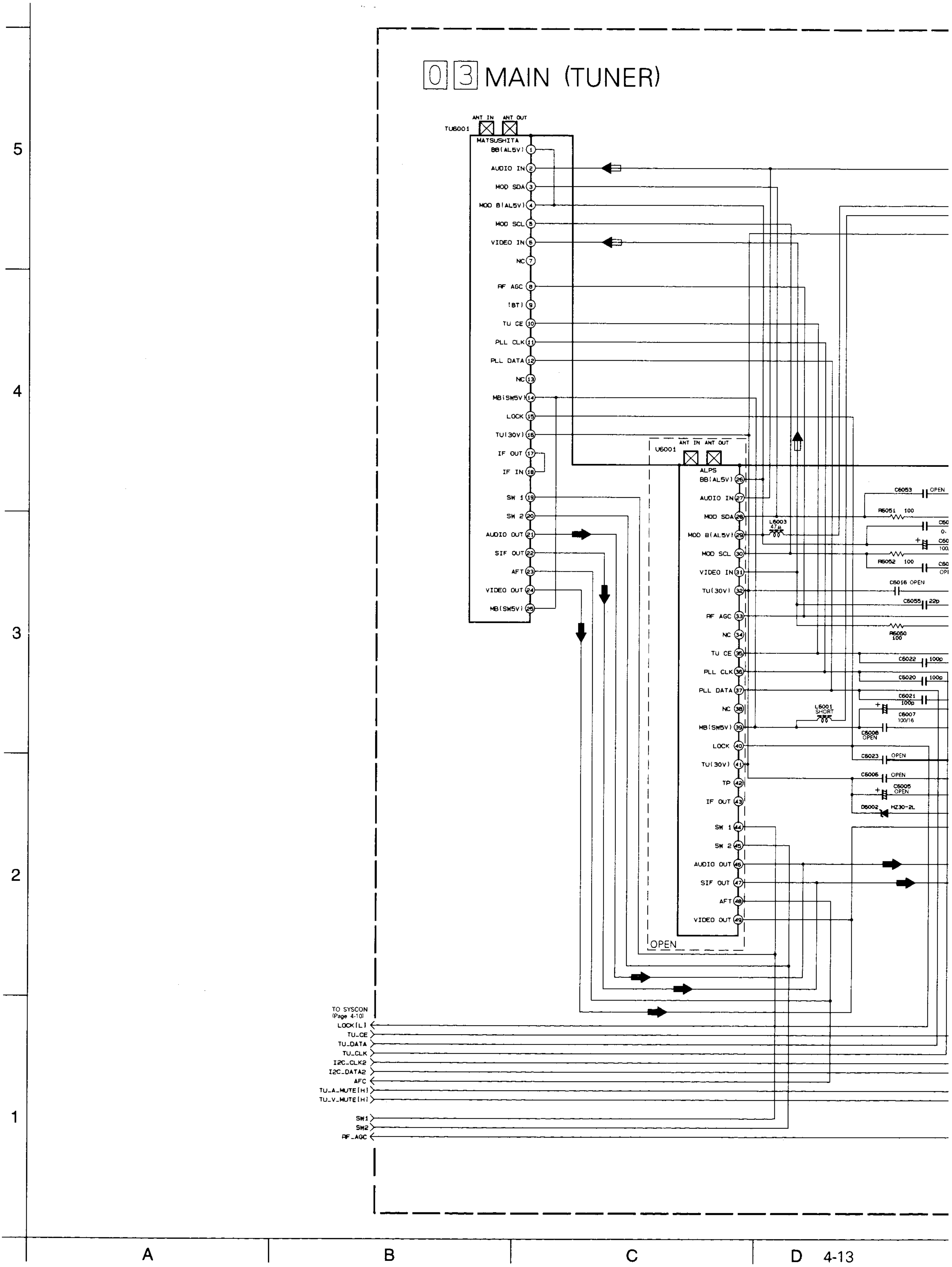
4.5 SWITCHING REGULATOR SCHEMATIC DIAGRAM


03 MAIN[SW.REG]
AC220-240V 50/60Hz
CN5001
BRN LIVE
BLU NEUTRAL
F5001 2A /250
LF5001
LF5002
D5001 S1WB(A)60F4102
VA5001 OPEN
C5001 0.068 /250
C5002 0.033 /250
C5006 68/400
R5101 330k
R5102 330k
R5103 68k
C5104 1 /50
R5113 OPEN
R5104 68k 2W
C5101 0.0047 /1k
K5102 SHORT
D5101 AU01
D5102 AU01
C5102 33p /1k
T5001
K5101
C5003 OPEN
Q5101 2SK2632
D
G
S
C5110 OPEN
R5110 220k
C5103 OPEN
D5105 1SS133
R5112 180
C5107 0.1/50
R5107 330 1/2W
R5106 0.39 1W
C5105 0.018 /50
R5109 680
R5111 220
C5106 270p /50
D5103 1SS133
R5108 1.8k
Q5102 2SD2144S/UV
D5104 OPEN
PC5101
R5305 470
C5005 0.0022 /250
GROUND POINT FOR PRIMARY VOLTAGE
DANGEROUS VOLTAGE
B5303 OPEN
D5201 AU01Z
C5201 220/6.3
C5305 0.01 /50
D5207 OPEN
D5212 RK14LF
D5203 AU01Z
D5205 OPEN
D5209 OPEN
GROUND FOR SECO VOLTAGE
D5210 AU01Z
D5211 AU01Z
1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

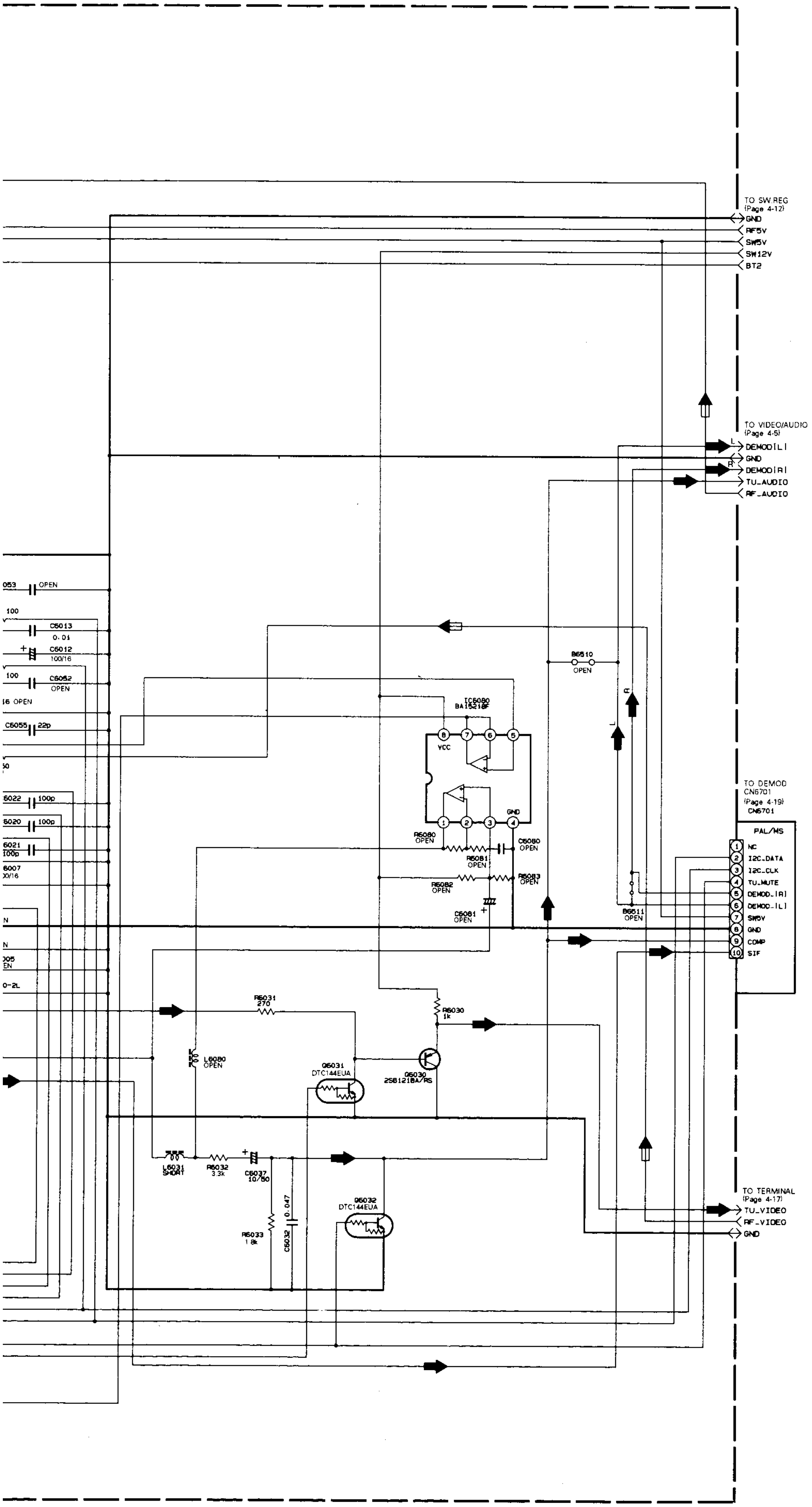

TO DISPLAY (Page 4-16)
DC3.5V[+]
DC3.5V[-]
TO SYSCON (Page 4-9)
SW5V
SW12V
P.SAVE[L]
P.CTL[H]
TO VIDEO/AUDIO (Page 4-5, 4-6)
SW5V
SW12V
SW12V
GND
TO SYSCON (Page 4-9)
DRUM_12V
TO TUNER (Page 4-14)
SW12V
SW5V
TO SYSCON (Page 4-9)
AL12V
AL5.8V
TO TERMINAL (Page 4-17)
SW12V
CH+12V
GND
TO DISPLAY (Page 4-16)
RCU5V
TO SYSCON (Page 4-9)
GND
GND
48V
M12/17V
TO SYSCON (Page 4-9)
V_UP[H]
TO TUNER (Page 4-14)
GND
RF5V
BT2
TO DISPLAY (Page 4-16)
-29V
B5303 OPEN
Q5312 2SD2144S/UV
R5313 2.2k
R5301 SHORT
Q5318 UN5111
R5314 1k
D5309 1SS133
Q5310 UN5211
C5201 220/6.3
R5307 1k
C5305 0.01 /50
IC5301
VCC2 VO2 STB GND VO1 -FIL VO1 VCC1 SENSE NF VOERR
1 2 3 4 5 6 7 8 9 10
B5301 OPEN
Q5306 2SB1239
R5310 4.7K
R5311 2.2K
D5308 1SS133
L5202 33μ
C5203 1200/10
C5208 220 /10
R5326 OPEN
D5320 0Ω
R5327 30k
R5306 33k
C5310 0.022 /50
B5302 OPEN
C5301 220 /6.3
C5304 0.068 /50
D5306 MTZJ11C
C5303 100 /16
D5302 RD6.8ES/B1
CP
CP5301 ICP-N38
D5204 AU01Z
L5201 33μ
C5202 820 /16
D5301 RD15ES/B1
C5207 220 /16
D5307 1SS133
Q5305 UN5111
B5305 OPEN
Q5304 2SD1450/ST
R5321 220
R5322 47k
C5308 100 /16
D5310 MTZJ11C
C5309 100 /16
D5305 SHORT
R5324 OPEN
D5311 OPEN
C5206 OPEN
5209 OPEN
Q5303 2SD2144S/UV
R5319 220
C5307 47 /25
C5306 100 /10
Q5301 2SB1256
CP
CP5302 ICP-N25
R5308 4.7k
R5309 2.2k
Q5302 DTC114TUA
OPEN
GROUND POINT FOR SECONDARY VOLTAGE
5210 U01Z
C5204 4.7 /100
R5302 1k
R5303 1.2k
B5304 OPEN
R5323 47k
R5317 27k
Q5311 2SA1576A/RS
D5304 1SS133
R5318 27k
C5205 10/50
D5303 RD27ES/B3
211 01Z
R5304 220 1/4W
FR

4.6 TUNER SCHEMATIC DIAGRAM



03 MAIN (TUNER)
TU6001
MATSUSHITA
ANT IN
ANT OUT
BB(AL5V) 1
AUDIO IN 2
MOD SDA 3
MOD B(AL5V) 4
MOD SCL 5
VIDEO IN 6
NC 7
RF AGC 8
(BT) 9
TU CE 10
PLL CLK 11
PLL DATA 12
NC 13
MB(SW5V) 14
LOCK 15
TU(30V) 16
IF OUT 17
IF IN 18
SW 1 19
SW 2 20
AUDIO OUT 21
SIF OUT 22
AFT 23
VIDEO OUT 24
MB(SW5V) 25
U6001
ALPS
BB(AL5V) 26
AUDIO IN 27
MOD SDA 28
MOD B(AL5V) 29
MOD SCL 30
VIDEO IN 31
TU(30V) 32
RF AGC 33
NC 34
TU CE 35
PLL CLK 36
PLL DATA 37
NC 38
MB(SW5V) 39
LOCK 40
TU(30V) 41
TP 42
IF OUT 43
SW 1 44
SW 2 45
AUDIO OUT 46
SIF OUT 47
AFT 48
VIDEO OUT 49
OPEN
L6003
47μ
L6001
SHORT
C6053 OPEN
R6051 100
R6052 100
C6016 OPEN
C6055 22p
R6050 100
C6022 100p
C6020 100p
C6021 100p
C6007 100/16
C6006 OPEN
C6023 OPEN
C6008 OPEN
C6005 OPEN
D6002 HZ30-2L
TO SYSCON (Page 4-10)
LOCK(L)
TU_CE
TU_DATA
TU_CLK
I2C_CLK2
I2C_DATA2
AFC
TU_A_MUTE(H)
TU_V_MUTE(H)
SW1
SW2
RF_AGC
5
4
3
2
1
A
B
C
D

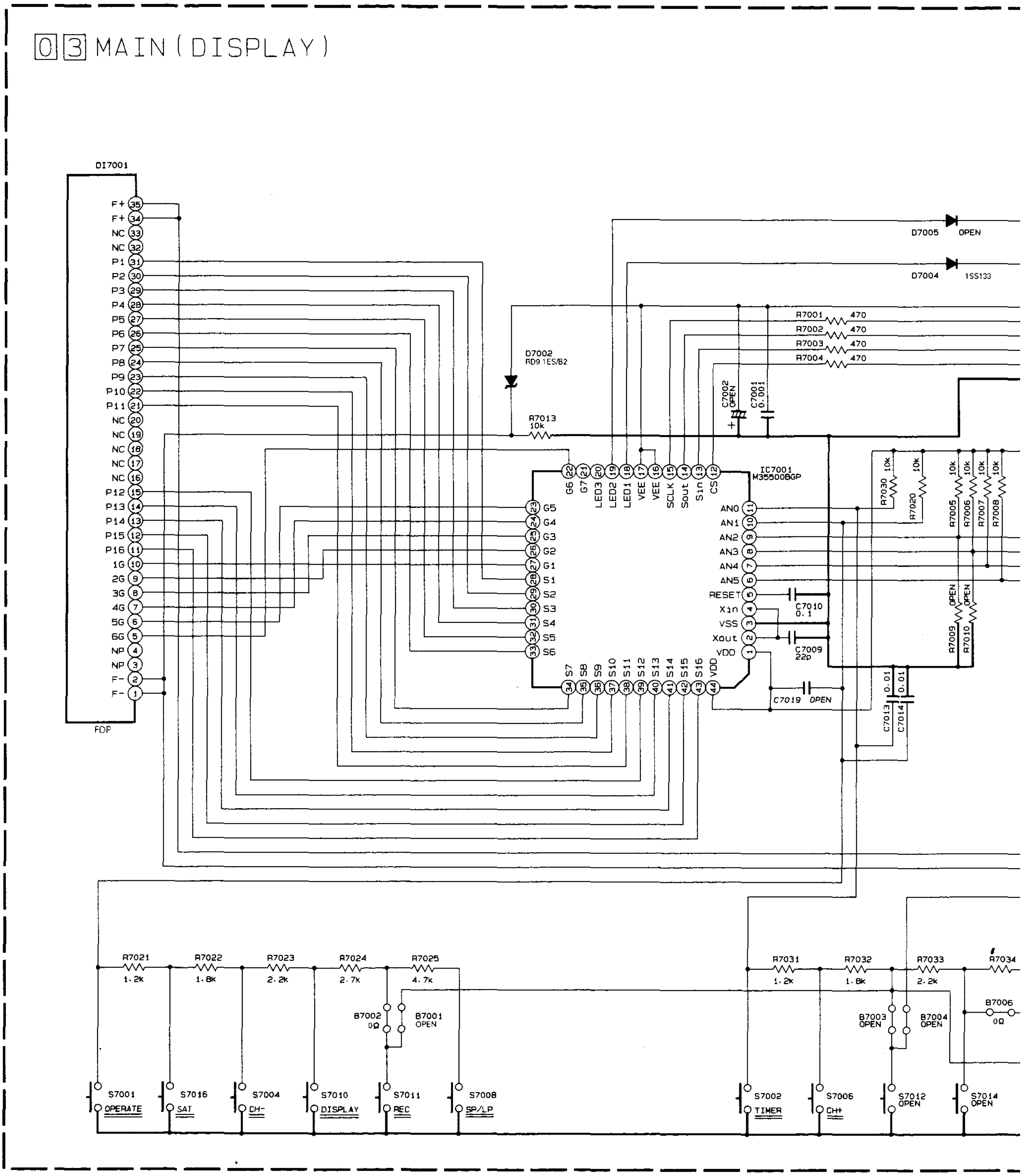
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



TO SW.REG
(Page 4-12)
GND
RF5V
SW5V
SW12V
BT2
TO VIDEO/AUDIO
(Page 4-5)
L
DEMOD[L]
GND
R
DEMOD[R]
TU_AUDIO
RF_AUDIO
053
OPEN
100
C6013
0.01
C6012
100/16
100
C6052
OPEN
16 OPEN
C6055
22p
50
6022
100p
5020
100p
6021
100p
6007
00/16
N
N
005
EN
0-2L
B6510
OPEN
R
L
IC6080
BA15218F
VCC
GND
R6080
OPEN
R6081
OPEN
C6080
OPEN
R6082
OPEN
R6083
OPEN
C6081
OPEN
B6511
OPEN
TO DEMOD
CN6701
(Page 4-19)
CN6701
PAL/MS
NC
I2C_DATA
I2C_CLK
TU_MUTE
DEMOD_[R]
DEMOD_[L]
SW5V
GND
COMP
SIF
R6031
270
R6030
1k
L6080
OPEN
Q6031
DTC144EUA
Q6030
2SB1218A/RS
L6031
SHORT
R6032
3.3k
C6037
10/50
0.047
C6032
R6033
1.8k
Q6032
DTC144EUA
TO TERMINAL
(Page 4-17)
TU_VIDEO
RF_VIDEO
GND

4.7 DISPLAY, MINI OPE AND SHUTTLE SCHEMATIC DIAGRAMS

NOTE : Whe
the

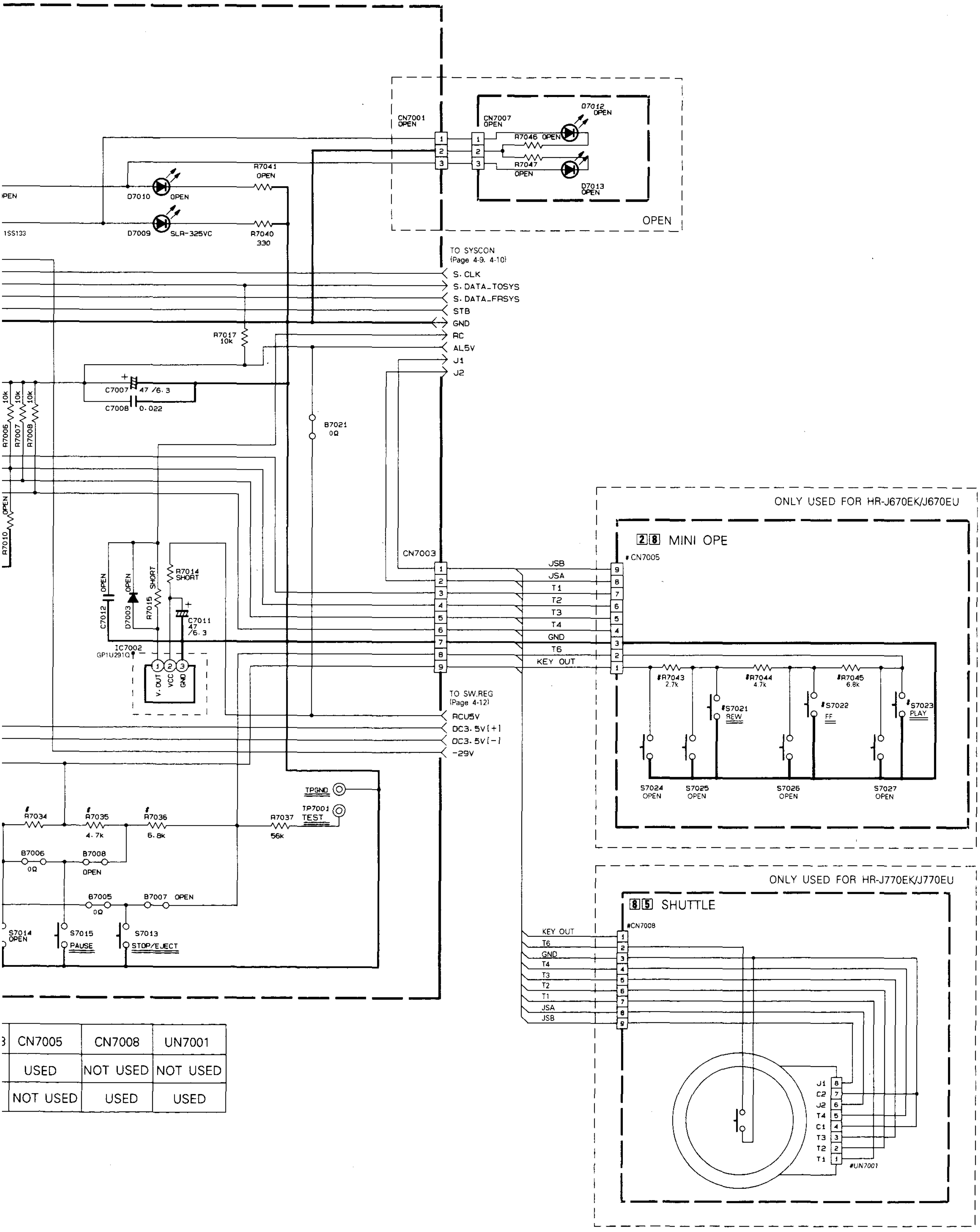


03 MAIN (DISPLAY)
DI7001
FDP
F+ 35
F+ 34
NC 33
NC 32
P1 31
P2 30
P3 29
P4 28
P5 27
P6 26
P7 25
P8 24
P9 23
P10 22
P11 21
NC 20
NC 19
NC 18
NC 17
NC 16
P12 15
P13 14
P14 13
P15 12
P16 11
1G 10
2G 9
3G 8
4G 7
5G 6
6G 5
NP 4
NP 3
F- 2
F- 1
D7005 OPEN
D7004 1SS133
D7002 RD9.1ES/B2
R7013 10k
R7001 470
R7002 470
R7003 470
R7004 470
C7002 OPEN
C7001 0.001
IC7001 M35500BGP
G6 G7 LED3 LED2 LED1 VEE VEE SCLK Sout Sin CS
G5 G4 G3 G2 G1 S1 S2 S3 S4 S5 S6
AN0 AN1 AN2 AN3 AN4 AN5 RESET Xin VSS Xout VDD
S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 VDD
C7010 0.1
C7009 22p
C7019 OPEN
C7013 0.01
C7014 0.01
R7030 10k
R7020 10k
R7005 10k
R7006 10k
R7007 10k
R7008 10k
R7009 OPEN
R7010 OPEN
R7021 1.2k
R7022 1.8k
R7023 2.2k
R7024 2.7k
R7025 4.7k
B7002 0Ω
B7001 OPEN
S7001 OPERATE
S7016 SAT
S7004 CH-
S7010 DISPLAY
S7011 REC
S7008 SP/LP
R7031 1.2k
R7032 1.8k
R7033 2.2k
# R7034
B7003 OPEN
B7004 OPEN
B7006 0Ω
S7002 TIMER
S7006 CH+
S7012 OPEN
S7014 OPEN

NOTE : Comparison chart of models & marks(#).

REF.NO.		R7034	R7035 R7036	R7043~R7045	S7020~S7023	CN70
MODEL	HR-J670EK/J670EU	0	NOT USED	USED	USED	USE
	HR-J770EK/J770EU	2.7k	USED	NOT USED	NOT USED	NOT

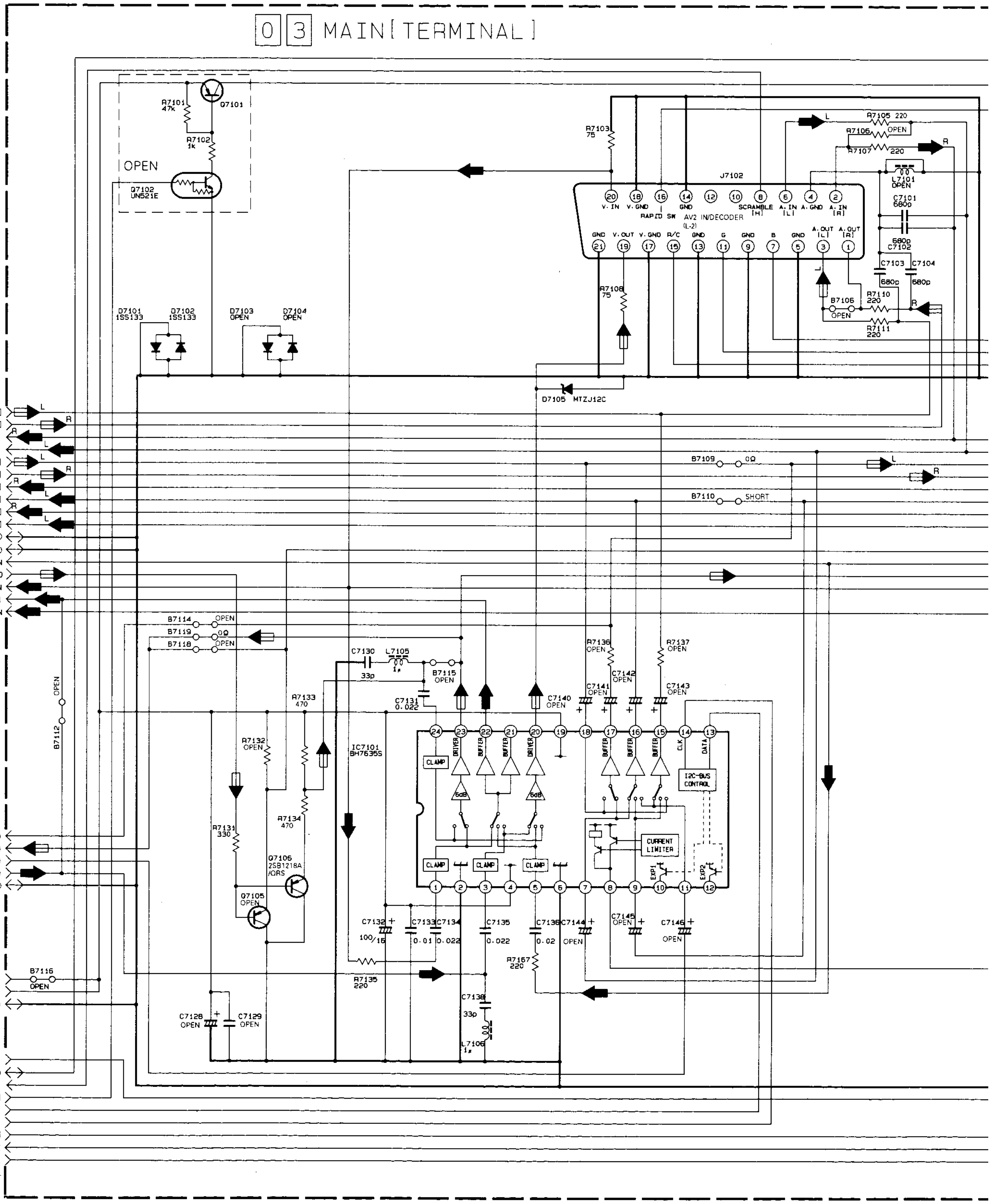
: When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



CN7001
OPEN
CN7007
OPEN
D7012
OPEN
R7046 OPEN
R7047
OPEN
D7013
OPEN
OPEN
R7041
OPEN
OPEN
D7010
OPEN
1SS133
D7009
SLR-325VC
R7040
330
TO SYSCON
(Page 4-9, 4-10)
S.CLK
S.DATA_TOSYS
S.DATA_FRSYS
STB
GND
RC
AL5V
J1
J2
R7017
10k
C7007
47 /6.3
C7008
0.022
R7006
10k
R7007
10k
R7008
10k
B7021
0Ω
R7010
OPEN
CN7003
ONLY USED FOR HR-J670EK/J670EU
28 MINI OPE
#CN7005
JSB
JSA
T1
T2
T3
T4
GND
T6
KEY OUT
C7012
OPEN
D7003
OPEN
R7015
SHORT
R7014
SHORT
C7011
47
/6.3
IC7002
GP1U291Q
V.OUT
VCC
GND
#R7043
2.7k
#R7044
4.7k
#R7045
6.8k
#S7021
REW
#S7022
FF
#S7023
PLAY
S7024
OPEN
S7025
OPEN
S7026
OPEN
S7027
OPEN
TO SW.REG
(Page 4-12)
RCU5V
DC3.5V(+)
DC3.5V(-)
-29V
TPGND
TP7001
TEST
R7034
R7035
4.7k
R7036
6.8k
R7037
56k
B7006
0Ω
B7008
OPEN
B7005
0Ω
B7007 OPEN
S7014
OPEN
S7015
PAUSE
S7013
STOP/EJECT
ONLY USED FOR HR-J770EK/J770EU
85 SHUTTLE
#CN7008
KEY OUT
T6
GND
T4
T3
T2
T1
JSA
JSB
J1
C2
J2
T4
C1
T3
T2
T1
#UN7001

CN7005	CN7008	UN7001
USED	NOT USED	NOT USED
NOT USED	USED	USED

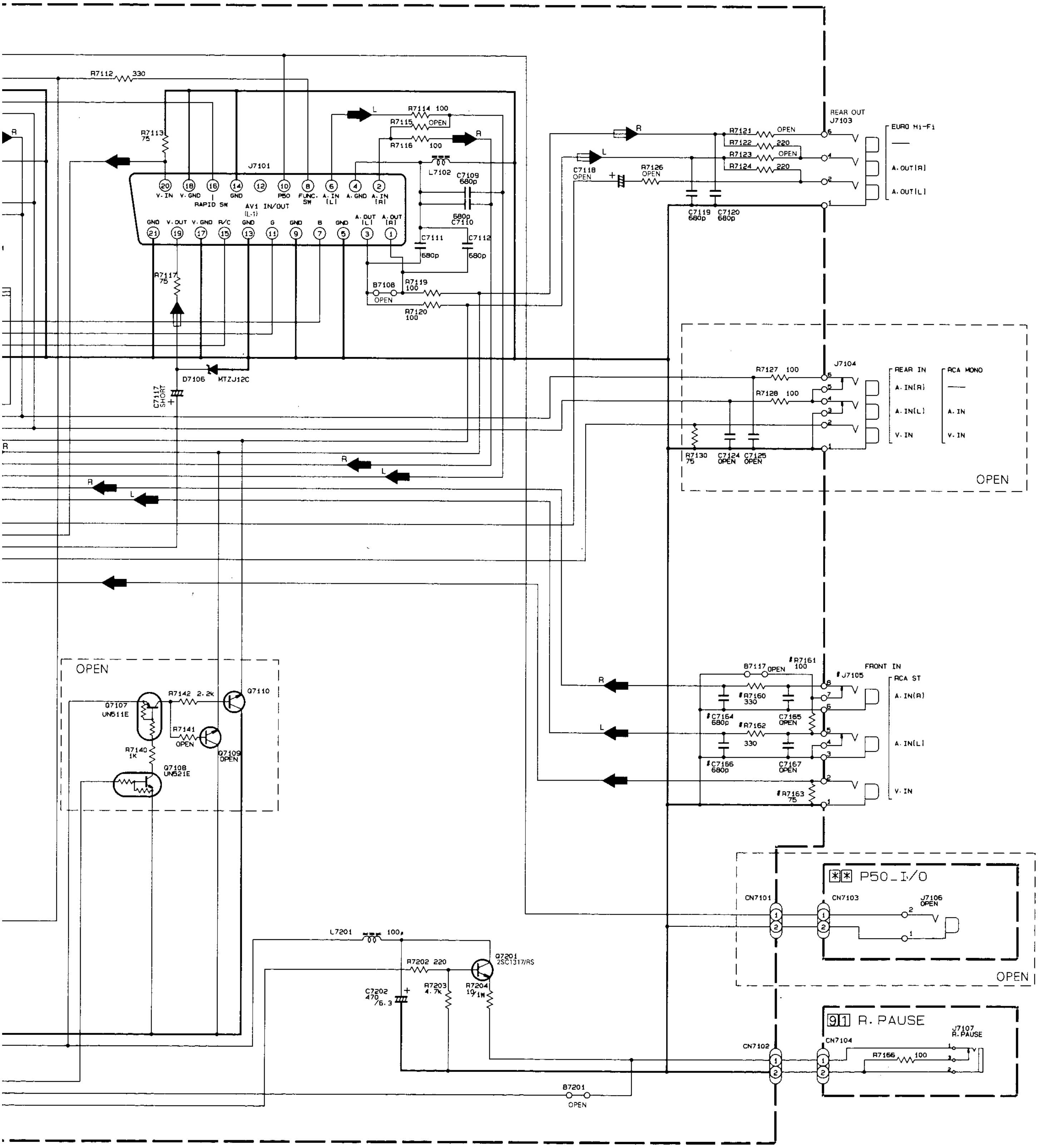
4.8 TERMINAL AND R.PAUSE SCHEMATIC DIAGRAMS


03 MAIN[TERMINAL]
R7101 47k
Q7101
R7102 1k
OPEN
Q7102 UN521E
D7101 1SS133
D7102 1SS133
D7103 OPEN
D7104 OPEN
R7103 75
J7102
V.IN
V.GND
RAPID SW
GND
SCRAMBLE (H)
A.IN (L)
A.GND
A.IN (R)
AV2 IN/DECODER (L-2)
GND
V.OUT
V.GND
R/C
GND
G
GND
B
GND
A.OUT (L)
A.OUT (R)
R7105 220
R7106 OPEN
R7107 220
L7101 OPEN
C7101 680p
C7102 680p
C7103 680p
C7104 680p
R7110 220
R7111 220
B7106 OPEN
R7108 75
D7105 MTZJ12C
TO VIDEO/AUDIO (Page 4-5)
DEC_OUT[L]
DEC_OUT[R]
A.IN2[R]
A.IN2[L]
LINE_OUT[L]
LINE_OUT[R]
A.IN1[R]
A.IN1[L]
F.AUDIO[R]
F.AUDIO[L]
GND
GND
R_V_IN
V_FROM_OSD
R2_V_IN
LINE_V_IN
F_V_IN
B7109 0Ω
B7110 SHORT
B7114 OPEN
B7119 0Ω
B7118 OPEN
B7112 OPEN
C7130 33p
L7105 1μ
B7115 OPEN
C7131 0.022
R7133 470
R7132 OPEN
R7134 470
R7131 330
Q7106 2SB1218A /QRS
Q7105 OPEN
IC7101 BH7635S
CLAMP
DRIVER
BUFFER
6dB
CLK
DATA
I2C-BUS CONTROL
CURRENT LIMITER
EXP1
EXP2
R7136 OPEN
R7137 OPEN
C7140 OPEN
C7141 OPEN
C7142 OPEN
C7143 OPEN
C7132 100/16
C7133 0.01
C7134 0.022
C7135 0.022
C7136 0.02
C7144 OPEN
C7145 OPEN
C7146 OPEN
R7167 220
R7135 220
C7138 33p
L7106 1μ
C7128 OPEN
C7129 OPEN
TO TUNER (Page 4-14)
(NC)RF_AUDIO
RF_VIDEO
(NC)TU_AUDIO
TU_VIDEO
GND
TO SW.REG (Page 4-12)
SW12V
CH+12V
GND
B7116 OPEN
TO SYSCON (Page 4-10)
AL5V
P50_I/O
SCR[H]
EE[L]
I2C_DATA2
I2C_CLK2
A.MUTE[H]
R.PAUSE
SAT_CTL
L
R

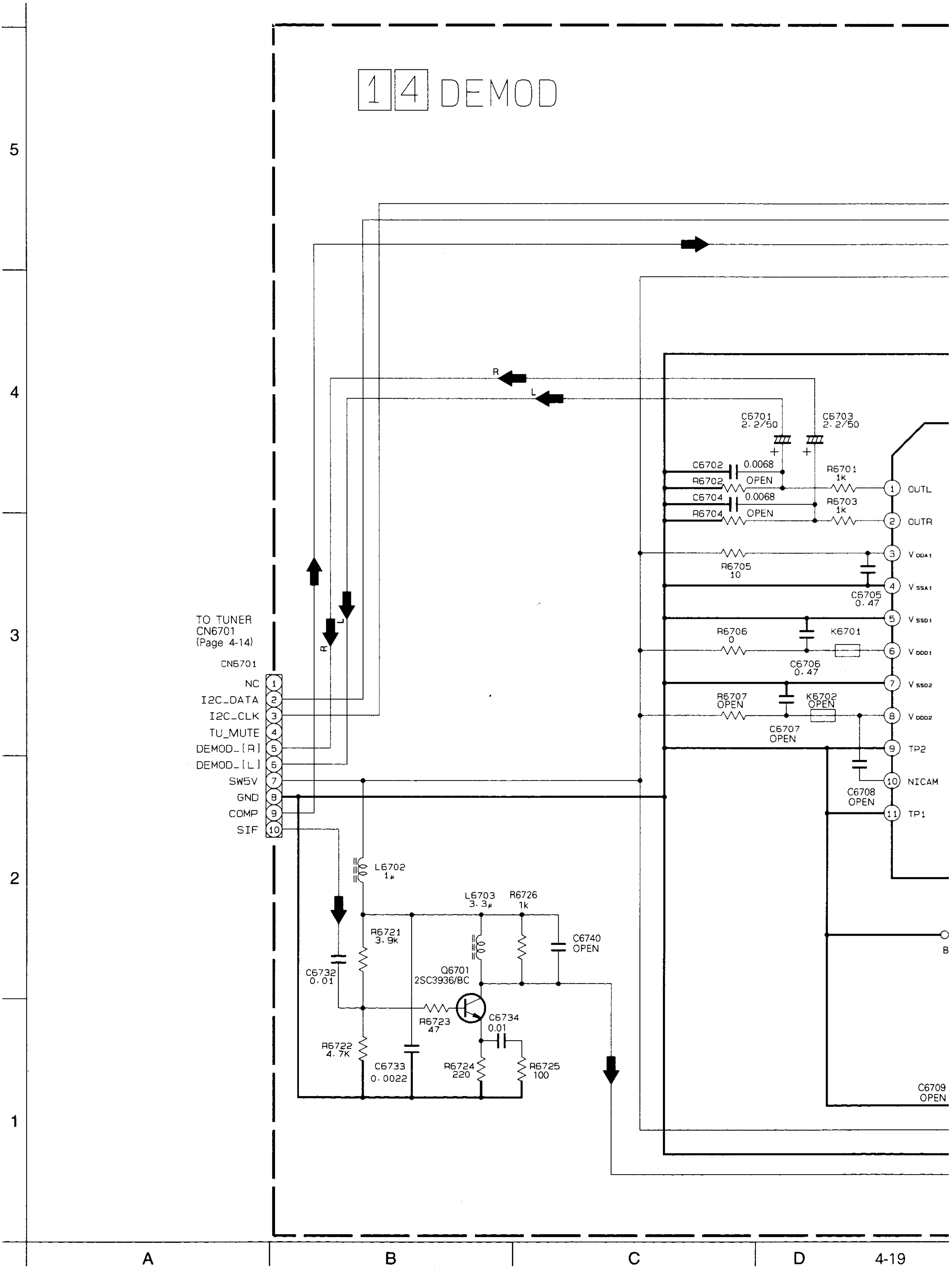
NOTE : Comparison chart of models & marks(#).

	REF.NO.	R7160~R7163	C7164 C7166	J7105
MODEL	HR-J670EU	NOT USED	NOT USED	NOT USED
	HR-J670EK/J770EK/J770EU	USED	USED	USED

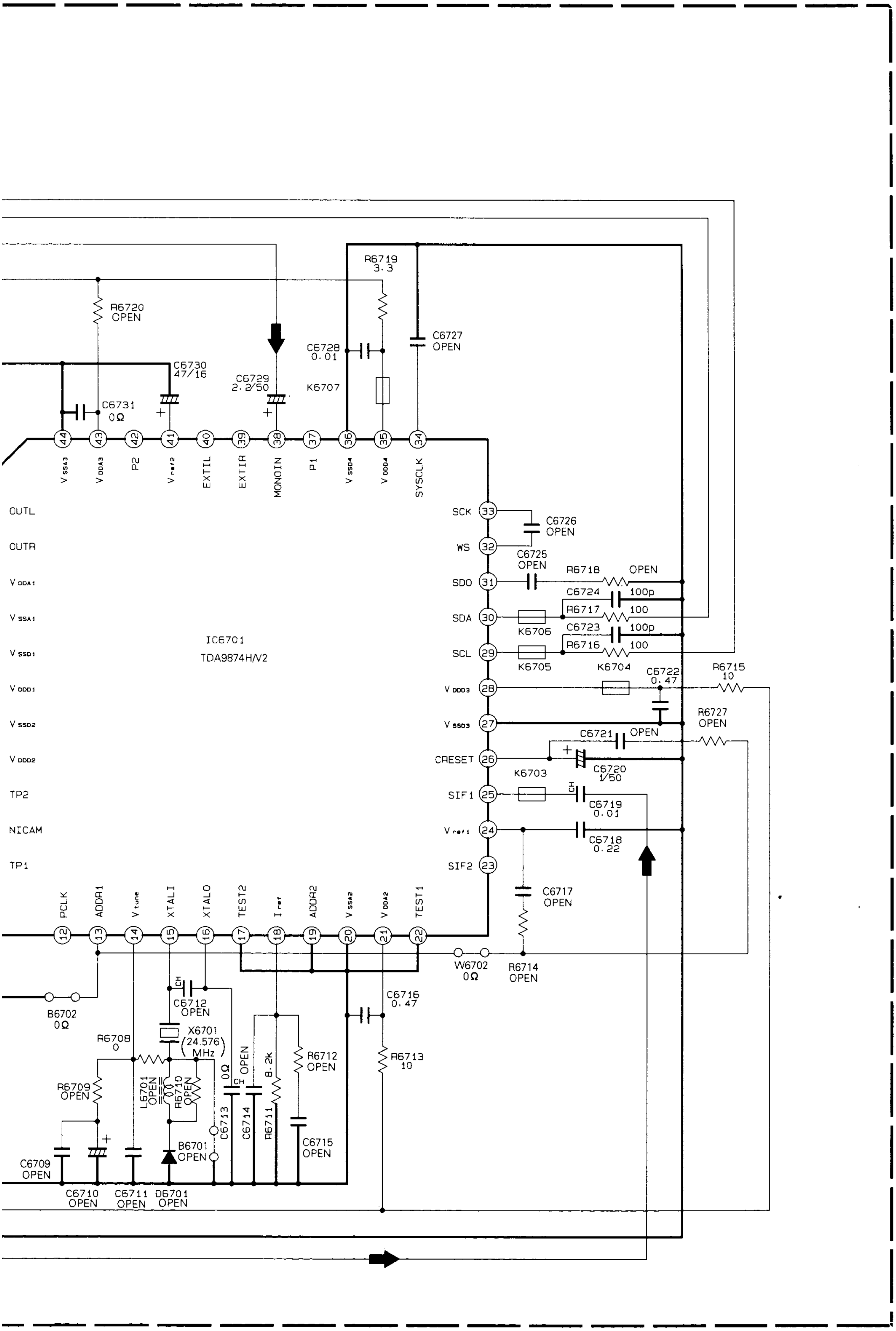
NOTE : *When ordering parts, be sure to order according to the Part Number indicated in the Parts List.*


R7112 330
R7113 75
J7101
V.IN
V.GND
RAPID SW
GND
P50
FUNC. SW
A.IN (L)
A.GND
A.IN (R)
AV1 IN/OUT (L-1)
GND
V.OUT
V.GND
R/C
GND
G
GND
B
GND
A.OUT (L)
A.OUT (R)
R7114 100
R7115 OPEN
R7116 100
L7102
C7109 680p
680p C7110
C7111 680p
C7112 680p
B7108 OPEN
R7119 100
R7120 100
R7117 75
D7106 MTZJ12C
C7117 SHORT
C7118 OPEN
R7126 OPEN
C7119 680p
C7120 680p
R7121 OPEN
R7122 220
R7123 OPEN
R7124 220
REAR OUT J7103
EURO Hi-Fi
A.OUT(R)
A.OUT(L)
J7104
R7127 100
R7128 100
R7130 75
C7124 OPEN
C7125 OPEN
REAR IN
A.IN(R)
A.IN(L)
V.IN
RCA MONO
A.IN
V.IN
OPEN
B7117 OPEN
#R7161 100
#R7160 330
#C7164 680p
#R7162 330
C7165 OPEN
#C7166 680p
C7167 OPEN
#R7163 75
FRONT IN
#J7105
RCA ST
A.IN(R)
A.IN(L)
V.IN
OPEN
Q7107 UN511E
R7142 2.2k
Q7110
R7141 OPEN
Q7109 OPEN
R7140 1K
Q7108 UN521E
L7201 100μ
Q7201 2SC1317/RS
R7202 220
C7202 470 /6.3
R7203 4.7k
R7204 1Ω 1W
B7201 OPEN
CN7101
CN7103
J7106 OPEN
✱✱ P50_I/O
OPEN
CN7102
CN7104
91 R.PAUSE
J7107 R.PAUSE
R7166 100
R
L

4.9 DEMODULATOR SCHEMATIC DIAGRAM

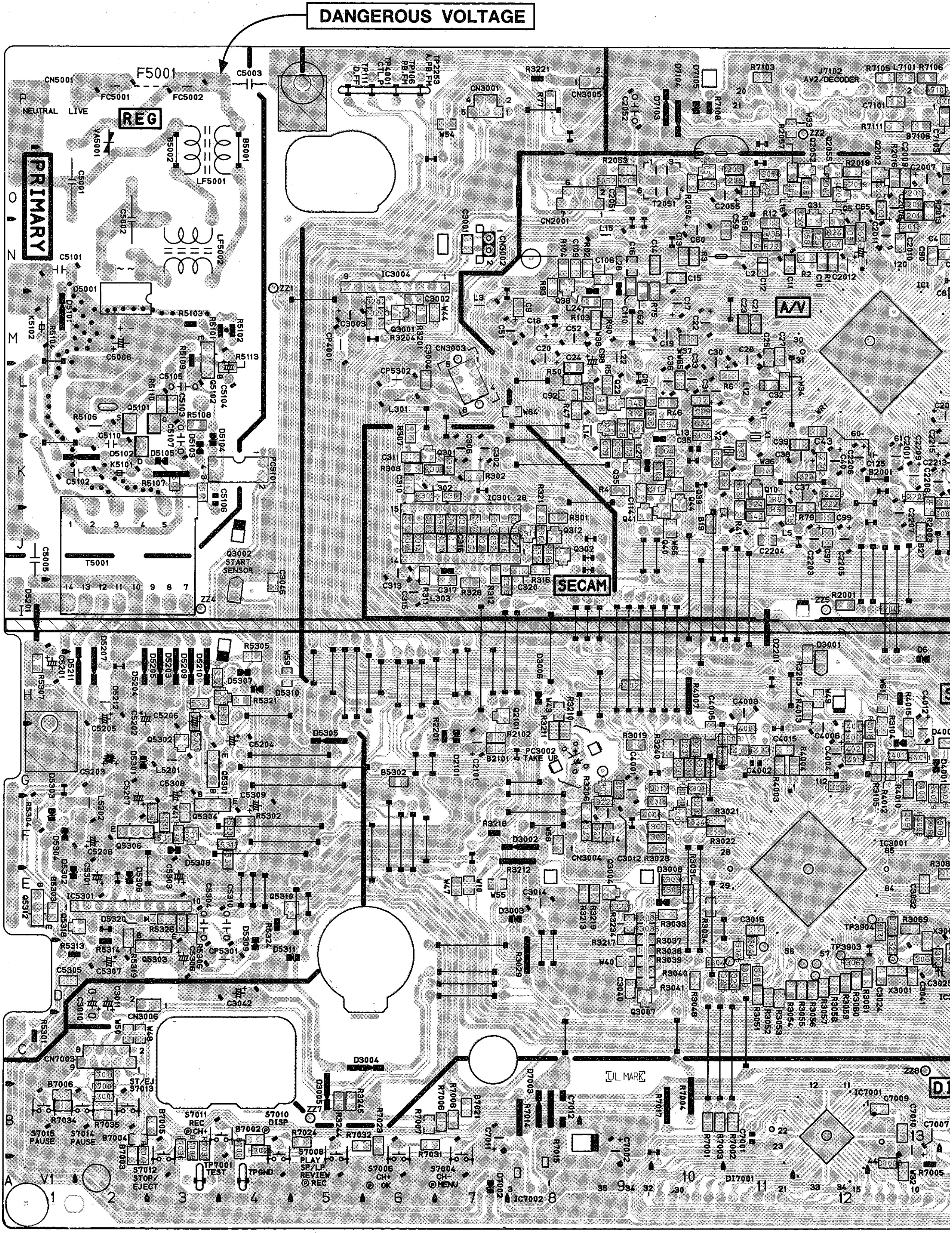

14 DEMOD
TO TUNER
CN6701
(Page 4-14)
CN6701
NC 1
I2C_DATA 2
I2C_CLK 3
TU_MUTE 4
DEMOD_[R] 5
DEMOD_[L] 6
SW5V 7
GND 8
COMP 9
SIF 10
R
L
C6701
2.2/50
C6703
2.2/50
C6702 0.0068
R6702 OPEN
C6704 0.0068
R6704 OPEN
R6701
1k
R6703
1k
1 OUTL
2 OUTR
3 VDDA1
R6705
10
4 VSSA1
C6705
0.47
5 VSSD1
R6706
0
K6701
6 VDDD1
C6706
0.47
7 VSSD2
R6707
OPEN
K6702
OPEN
8 VDDD2
C6707
OPEN
9 TP2
10 NICAM
C6708
OPEN
11 TP1
B
C6709
OPEN
L6702
1μ
L6703
3.3μ
R6726
1k
C6740
OPEN
R6721
3.9k
C6732
0.01
Q6701
2SC3936/BC
R6723
47
C6734
0.01
R6722
4.7K
C6733
0.0022
R6724
220
R6725
100
5
4
3
2
1
A
B
C
D

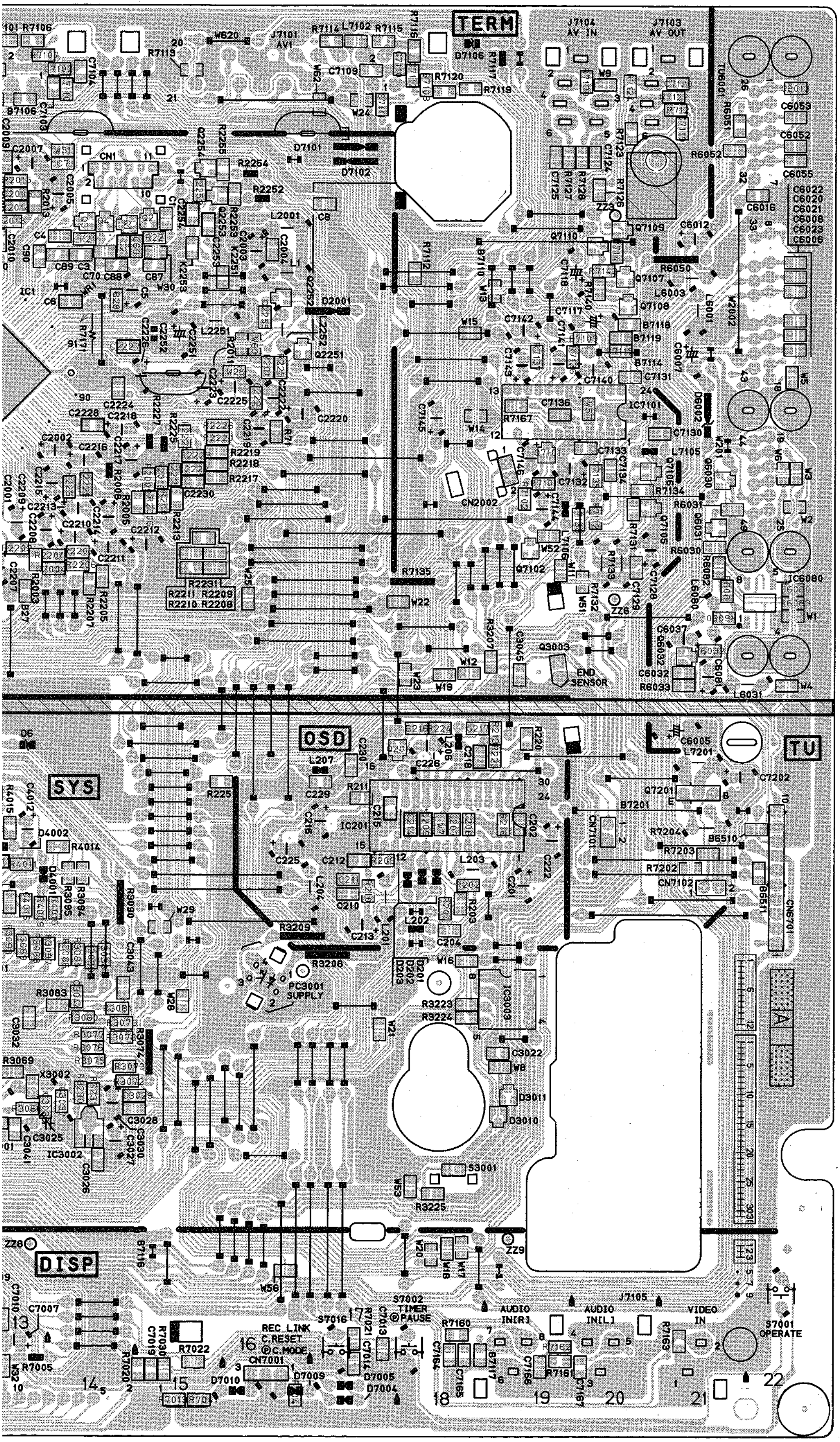
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



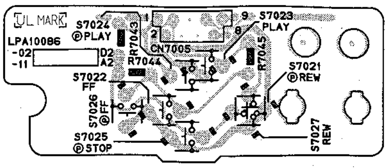
IC6701
TDA9874H/V2
R6719
3.3
R6720
OPEN
C6727
OPEN
C6728
0.01
C6730
47/16
C6729
2.2/50
K6707
C6731
0Ω
V SSA3
V DDA3
P2
V ref2
EXTIL
EXTIR
MONOIN
P1
V SSD4
V DDD4
SYSCLK
OUTL
OUTR
V DDA1
V SSA1
V SSD1
V DDD1
V SSD2
V DDD2
TP2
NICAM
TP1
SCK
WS
SDO
SDA
SCL
V DDD3
V SSD3
CRESET
SIF1
V ref1
SIF2
C6726
OPEN
C6725
OPEN
R6718
OPEN
C6724
100p
R6717
100
K6706
C6723
100p
R6716
100
K6705
K6704
C6722
0.47
R6715
10
R6727
OPEN
C6721
OPEN
C6720
1/50
K6703
C6719
0.01
C6718
0.22
C6717
OPEN
R6714
OPEN
W6702
0Ω
PCLK
ADDR1
V tune
XTALI
XTALO
TEST2
I ref
ADDR2
V SSA2
V DDA2
TEST1
B6702
0Ω
C6712
OPEN
X6701
(24.576 MHz)
R6708
0
R6709
OPEN
L6701
OPEN
R6710
OPEN
0Ω
OPEN
8.2k
R6712
OPEN
C6713
C6714
R6711
C6715
OPEN
C6716
0.47
R6713
10
B6701
OPEN
C6709
OPEN
C6710
OPEN
C6711
OPEN
D6701
OPEN
CH

4.10 MAIN, A/C HEAD, R.PAUSE, SHUTTLE, MINI OPE AND LOADING MOTOR CIRCUIT BOARDS

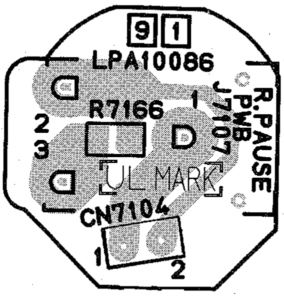

DANGEROUS VOLTAGE
PRIMARY
REG
F5001
CN5001
NEUTRAL LIVE
FC5001
FC5002
C5003
VA5001
B5002
B5001
LF5001
LF5002
C5001
C5002
C5101
D5001
K5102
R5103
R5102
R5101
R5104
C5006
R5113
R5109
C5105
Q5102
C5104
R5110
C5103
Q5101
R5108
R5106
C5110
C5107
D5102
D5103
D5104
D5105
K5101
C5102
R5107
PC5101
C5106
C5005
T5001
Q3002 START SENSOR
C3046
ZZ4
ZZ1
TP111 D.FF
TP4001 CTL.P
TP106 PB.FM
TP2253 A.PB.FM
CN3001
W54
R3221
R77
CN3005
D7104
D7105
D7103
C2052
R7103
J7102 AV2/DECODER
R7105
L7101
R7106
C7101
R7111
R2057
ZZ2
Q2052
Q2055
R2019
R2016
Q2002
C2009
C2007
B7106
R2053
T2051
R2054
C2051
C2055
CN2001
C3001
CN3002
IC3004
C3002
C3003
CP4001
Q3001
R3204
R3201
C3004
W44
L3
CN3003
CP5302
L301
W64
R307
C311
Q301
C306
C302
R308
C310
R302
L302
IC301
R321
R301
Q312
Q302
R316
C313
C317
R328
R312
C320
C315
L303
R311
SECAM
A/V
IC1
WR1
X1
X2
B2001
C2204
C2203
C2205
C2207
R2001
ZZ5
D2201
D3001
R3205
R4013
W49
C4008
R4015
C4012
D6
W61
R4007
C4005
C4015
C4006
R4004
C4002
R4003
C4004
R3104
R3105
R4010
R4012
D4001
IC3001
R3081
C3032
TP3904
R3069
X3001
TP3903
C3024
C3025
C3041
D5201
R5307
C5201
D5211
D5207
D5205
D5203
D5209
D5210
R5305
W59
D5307
D5310
R5321
D5204
D5212
C5205
C5202
C5206
Q5302
C5204
D5305
D5301
L5201
C5203
Q5301
C5208
C5207
L5202
C5309
R5302
Q5304
Q5306
C5303
D5308
D5306
C5302
Q5310
IC5301
Q5318
Q5312
R5313
D5320
R5326
R5324
D5309
R5314
R5319
Q5303
R5306
CP5301
D5311
C5305
C5307
C3042
C3011
C3010
CN3006
W50
W48
R5301
CN7003
B7006
ST/EJ S7013
R7034
R7035
S7015 PAUSE
S7014 PAUSE
B7004
B7003
B7005
S7011 REC ⊚CH+
S7012 STOP/EJECT
TP7001 TEST
TPGND
B7002
R7024
S7008 SP/LP
S7010 DISP
ZZ7
S7009 PLAY REVIEW ⊚REC
S7006 CH+ ⊚ OK
S7004 CH- ⊚MENU
R7032
R7031
D3004
D3005
R3245
R3244
R7023
R7006
R7007
R7008
B7021
C7011
D7002
IC7002
D7003
R7014
C7012
R7015
C7002
R7017
R7004
UL MARK
R7001
R7003
R7002
C7001
DI7001
IC7001
C7009
C7010
C7007
R7005
ZZ8
W52
D3006
W43
R3210
Q2101
R2102
R3211
R2201
D2101
C2101
B2101
PC3002 TAKE UP
R3206
B5302
R3019
R3240
C4001
R3021
R3022
CN3004
C3012
R3028
Q3004
D3008
R3031
R3218
D3002
W56
R3212
W47
W10
W55
C3014
D3003
R3213
R3219
R3224
R3217
R3033
R3037
R3038
R3039
R3034
W40
R3040
R3041
C3040
Q3007
R3048
C3016
R3029
R3051
R3052
R3053
R3054
R3055
R3056
R3057
R3058
R3059
R3060
A B C D E F G H I J K L M N O P
1 2 3 4 5 6 7 8 9 10 11 12


TERM
J7104
AV IN
J7103
AV OUT
J7101
AV1
OSD
SYS
TU
DISP
CN2002
IC7101
IC201
IC3002
IC3003
Q3003
END SENSOR
PC3001
SUPPLY
S3001
REC_LINK
C.RESET
ⓟC.MODE
CN7001
S7016
S7002
TIMER
ⓟPAUSE
AUDIO IN[R]
AUDIO IN[L]
J7105
VIDEO IN
S7001
OPERATE
CN6701
A

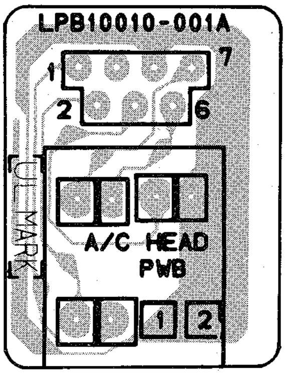
— MINI OPE —


UL MARK
LPA10086
-02
-11
S7024
ⓟPLAY
S7023
PLAY
CN7005
R7043
R7044
R7045
S7022
FF
S7026
ⓟFF
S7021
ⓟREW
S7025
ⓟSTOP
S7027
REW

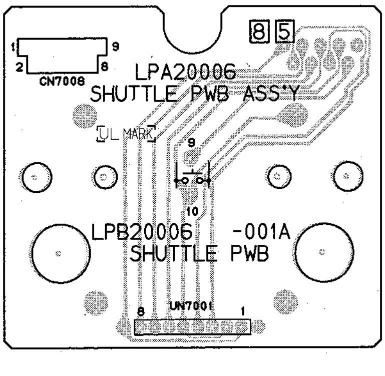
— R.PAUSE —


9 1
LPA10086
R.PAUSE
PWB
J7107
R7166
UL MARK
CN7104
1
2
3

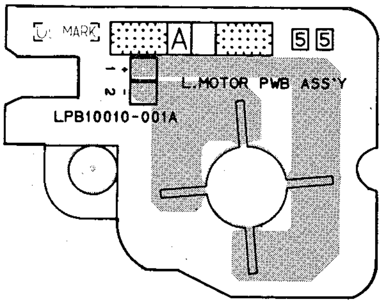
— A/C HEAD —


LPB10010-001A
1
7
2
6
UL MARK
A/C HEAD
PWB
1
2

— SHUTTLE —


8 5
CN7008
LPA20006
SHUTTLE PWB ASS'Y
UL MARK
LPB20006 -001A
SHUTTLE PWB
UN7001

— LOADING MOTOR —


UL MARK
A
5 5
L.MOTOR PWB ASS'Y
LPB10010-001A

COMPONENT PARTS LOCATION GUIDE <MAIN>

REF.NO.	LOCATION		
CAPACITOR			
C1	B	C	15N
C2	B	C	14N
C3	B	C	14N
C4	B	C	14N
C5	A	D	14N
C6	B	C	14N
C7	B	C	14O
C8	B	C	17O
C9	B	C	8M
C10	B	C	12N
C11	B	C	11N
C12	B	C	11N
C13	B	C	10N
C14	B	C	10N
C15	B	C	10N
C16	B	C	9N
C17	A	D	10M
C18	A	D	8M
C19	A	D	10M
C20	A	D	8M
C21	B	C	11M
C22	A	D	10M
C23	B	C	11M
C24	B	C	8L
C25	B	C	11M
C27	B	C	11M
C28	A	D	11M
C29	B	C	10L
C30	A	D	10M
C31	A	D	10L
C32	B	C	11L
C33	A	D	10L
C34	B	C	10L
C35	A	D	10K
C36	A	D	10L
C37	A	D	11K
C38	A	D	12K
C39	B	C	12K
C40	A	D	12K
C43	B	C	12L
C51	A	D	8M
C52	A	D	8M
C53	B	C	10K
C57	B	C	12O
C59	B	C	11N
C60	A	D	10N
C61	B	C	12N
C62	B	C	9N
C64	B	C	10K
C65	A	D	12O
C69	B	C	14N
C70	B	C	14N
C78	B	C	11N
C79	B	C	9K
C81	B	C	9L
C87	B	C	15N
C88	B	C	14N
C89	B	C	14N
C90	B	C	13N
C92	B	C	8L
C94	B	C	10L
C95	B	C	9K
C97	B	C	12J
C98	A	D	9M
C99	B	C	12J
C106	B	C	9N
C108	B	C	10K
C109	B	C	8N
C110	B	C	9N
C112	B	C	10K
C113	B	C	10K
C114	B	C	9K
C125	A	D	12L
C201	A	D	19G
C202	B	C	19H
C204	B	C	18F
C206	B	C	18H
C207	B	C	18H
C209	B	C	18H
C210	B	C	17G
C211	B	C	17G
C212	B	C	17G
C213	A	D	17F
C214	B	C	18H
C215	B	C	17H
C216	A	D	17H
C217	B	C	18I
C218	B	C	18H
C222	A	D	19G
C225	A	D	16G
C226	A	D	18H
C229	B	C	17H
C230	B	C	17H
C301	B	C	8J
C302	A	D	7K
C303	B	C	7J
C304	B	C	7J
C305	B	C	7J
C306	A	D	7K
C307	B	C	7K
C308	B	C	7J
C309	B	C	6J
C310	B	C	6K
C311	B	C	6K
C312	B	C	6J
C313	A	D	6J
C314	B	C	6J
C315	A	D	6I
C316	B	C	7J
C317	B	C	7J
C318	B	C	7J
C319	B	C	7I
C320	B	C	8J
C321	B	C	7J
C322	B	C	7J
C2001	A	D	13K
C2002	A	D	13L
C2003	A	D	16N
C2004	B	C	16N
C2005	A	D	14O
C2006	B	C	13O
C2007	A	D	13O
C2008	A	D	13O
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C2012	A	D	12N
C2013	B	C	13N
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C2055	A	D	11O
C2101	A	D	7G
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C2203	A	D	12J
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C2212	A	D	15K
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C2214	A	D	14K
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C2219	A	D	16L
C2220	A	D	16L
C2221	B	C	16L
C2222	A	D	16L
C2223	A	D	15L
C2224	B	C	14M
C2225	A	D	16M
C2226	A	D	15M
C2227	B	C	14M
C2228	B	C	14L
C2229	B	C	14K
C2230	B	C	15K
C2251	A	D	15M
C2252	A	D	15M
C2253	B	C	15N
C2254	B	C	15O
C2255	B	C	16M
C3001	B	C	7N
C3002	B	C	6M
C3003	A	D	5M
C3004	B	C	6L
C3010	A	D	2C
C3011	A	D	2C
C3012	A	D	9F
C3013	B	C	9G
C3014	A	D	8E
C3016	B	C	11E
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C3033	B	C	12G
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C3038	B	C	14F
C3039	B	C	14F
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C3041	B	C	13D
C3042	A	D	4D
C3043	B	C	14F
C3044	B	C	14F
C3045	B	C	19I
C3046	B	C	4I
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C4006	A	D	12G
C4007	B	C	11G
C4008	A	D	11H
C4009	B	C	11G
C4010	B	C	10F
C4011	B	C	13G
C4012	A	D	13H
C4013	B	C	12G
C4014	B	C	12G
C4015	B	C	11G
C4016	B	C	13G
C5001	A	D	1O
C5002	A	D	2N
C5003	A	D	4P
C5005	A	D	1J
C5006	A	D	2M
C5101	A	D	1N
C5102	A	D	1K
C5103	B	C	3L
C5104	A	D	4M
C5105	A	D	3L
C5106	A	D	3J
C5107	A	D	3K
C5110	A	D	2K
C5201	A	D	1I
C5202	A	D	2H
C5203	A	D	2G
C5204	A	D	4G
C5205	A	D	2H
C5206	A	D	3H
C5207	A	D	2F
C5208	A	D	2F
C5301	A	D	2E
C5303	A	D	3E
C5304	A	D	3E
C5305	B	C	1D
C5306	A	D	3D
C5307	A	D	2D
C5308	A	D	3G
C5309	A	D	4F
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C6005	A	D	21I
C6006	B	C	22M
C6007	A	D	21M
C6008	B	C	22M
C6012	A	D	21N
C6013	B	C	22P
C6016	B	C	22O
C6020	B	C	22N
C6021	B	C	22N
C6022	B	C	22N
C6023	B	C	22M
C6032	B	C	21I
C6037	A	D	21J
C6052	B	C	22O
C6053	B	C	22P
C6055	B	C	22O
C6080	B	C	22J
C6081	A	D	21I
C7001	A	D	11B
C7002	A	D	9B
C7007	A	D	13B
C7008	B	C	13A
C7009	B	C	13B
C7010	B	C	13B
C7011	A	D	7B
C7012	A	D	8B
C7013	B	C	17B
C7014	B	C	17A
C7019	B	C	15A
C7101	B	C	13P
C7102	B	C	14P
C7103	B	C	14P
C7104	B	C	14P
C7109	B	C	17P
C7110	B	C	17P
C7111	B	C	17P
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C7118	A	D	20N
C7119	B	C	21P
C7120	B	C	21P
C7124	B	C	20O
C7125	B	C	19O
C7128	A	D	20K
C7129	B	C	20J
C7130	B	C	20L
C7131	B	C	20M
C7132	A	D	20L
C7133	B	C	20L
C7134	B	C	20L
C7135	B	C	20L
C7136	B	C	19L
C7138	B	C	20K
C7140	A	D	20M
C7141	A	D	19M
C7142	A	D	19M
C7143	A	D	19M
C7144	A	D	19K
C7145	A	D	18L
C7146	A	D	19L
C7164	B	C	18A
C7165	B	C	18A
C7166	B	C	19A
C7167	B	C	20A
C7202	A	D	21H
CONNECTOR			
CN1	A	D	14O
CN2001	A	D	9O
CN2002	A	D	19L
CN3001	A	D	7P
CN3002	A	D	7N
CN3003	A	D	7L
CN3004	A	D	9F
CN3005	A	D	9P
CN3006	A	D	3D
CN5001	A	D	1P
CN6701	A	D	22F
CN7001	A	D	16A
CN7003	A	D	2C
CN7101	A	D	20H
CN7102	A	D	21G
DIODE			
D6	A	D	13H
D201	A	D	18G
D202	A	D	18G
D203	A	D	18G
D2001	A	D	16M
D2101	A	D	7H
D2201	A	D	11I
D3001	A	D	12H
D3002	A	D	8F
D3003	A	D	8E
D3004	A	D	5C
D3005	A	D	5C
D3006	A	D	8H
D3008	A	D	10E
D3010	B	C	19D
D3011	B	C	19D
D4001	A	D	13G
D4002	A	D	13G
D5001	B	C	2M
D5101	A	D	1M
D5102	A	D	2K
D5103	A	D	3K
D5104	A	D	3L
D5105	A	D	3K
D5201	A	D	1I
D5203	A	D	3I
D5204	A	D	2I
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D5207	A	D	2I
D5209	A	D	3I
D5210	A	D	3I
D5211	A	D	2H
D5212	A	D	2I
D5301	A	D	2G
D5302	A	D	1F
D5303	A	D	1F
D5304	A	D	1F
D5305	A	D	5G
D5306	A	D	2F
D5307	A	D	4H
D5308	A	D	3F
D5309	A	D	4D
D5310	A	D	4H
D5311	A	D	4D
D5320	B	C	2E
D6002	A	D	21M
D7002	A	D	7A
D7003	A	D	8B
D7004	A	D	17A
D7005	A	D	17A
D7009	A	D	16A
D7010	A	D	16A
D7101	A	D	17O
D7102	A	D	17O
D7103	A	D	10P
D7104	A	D	10P
D7105	A	D	10P
D7106	A	D	18P
IC			
IC1	B	C	13M
IC201	A	D	19G
IC301	A	D	8J
IC3001	B	C	12F
IC3002	B	C	14D
IC3003	A	D	19F
IC3004	A	D	7N
IC5301	A	D	2E
IC6080	B	C	22J
IC7001	B	C	12B
IC7002	A	D	8A
IC7101	A	D	20L
JACK			
J7101	A	D	16P
J7102	A	D	12P
J7103	A	D	21P
J7104	A	D	20P
J7105	A	D	20A
COIL			
L1	A	D	16N
L2	A	D	11N
L3	A	D	7M
L4	A	D	11J
L5	A	D	11J
L11	A	D	11L
L12	A	D	11L
L13	A	D	10K
L14	A	D	9L
L15	A	D	9N
L16	A	D	11O
L22	A	D	9M
L24	A	D	9N
L27	A	D	9K
L28	A	D	9M
L201	A	D	17G
L202	A	D	18F
L203	A	D	19G
L204	A	D	16G
L206	A	D	18I
L207	A	D	17H
L301	A	D	6L
L302	A	D	6K
L303	A	D	6J
L2001	A	D	16N
L2251	A	D	16M
L2252	A	D	16M
L5201	A	D	3G
L5202	A	D	2G
L6001	A	D	21M
L6003	A	D	21N
L6031	A	D	21I
L6080	A	D	21J
L7101	B	C	13P
L7102	B	C	17P
L7105	A	D	21L
L7106	A	D	19K
L7201	A	D	21H
TRANSISTOR			
Q1	B	C	14N
Q2	B	C	15N
Q3	B	C	14N
Q4	B	C	14N
Q5	B	C	12O
Q10	B	C	11K
Q21	B	C	9L
Q22	B	C	9L
Q31	B	C	12O
Q34	B	C	9L
Q35	B	C	9K
Q38	B	C	8N
Q39	B	C	10K
Q40	B	C	10J
Q41	B	C	9J
Q44	B	C	10K
Q201	B	C	17H
Q301	B	C	6K
Q302	B	C	8J
Q311	B	C	8J
Q312	B	C	8J
Q2001	B	C	13O
Q2002	B	C	13O
Q2003	B	C	12O
Q2051	B	C	10O
Q2052	B	C	12O
Q2053	B	C	11O
Q2054	B	C	11O
Q2055	B	C	12O
Q2101	B	C	7H
Q2251	B	C	16M
Q2252	B	C	16N
Q2253	B	C	15O
Q2254	B	C	15O
Q3001	B	C	6M
Q3002	A	D	4I
Q3003	A	D	19I
Q3004	B	C	9E
Q3005	B	C	9G
Q3007	B	C	9D
Q4001	B	C	10F
Q5101	A	D	2L
Q5102	A	D	3M
Q5301	A	D	3G
Q5302	B	C	3G
Q5303	A	D	3D
Q5304	A	D	4F
Q5305	B	C	4H
Q5306	A	D	2F
Q5310	B	C	5E
Q5311	B	C	3F
Q5312	A	D	1E
Q5318	B	C	2E
Q6030	B	C	21K
Q6031	B	C	21K
Q6032	B	C	21I
Q7101	B	C	19L
Q7102	B	C	19K
Q7105	B	C	20K
Q7106	B	C	20L
Q7107	B	C	20N
Q7108	B	C	20M
Q7109	B	C	20N
Q7110	B	C	20N
Q7201	A	D	21H
RESISTOR			
R1	B	C	12N
R2	B	C	12N
R3	B	C	10N
R4	B	C	9K
R5	B	C	9L
R6	B	C	11L
R7	B	C	10L
R8	B	C	11K
R9	B	C	11J
R12	B	C	11N
R21	B	C	14N
R22	B	C	15N
R23	B	C	12N
R24	B	C	12N
R36	B	C	10K
R37	B	C	11K
R41	B	C	11J
R42	B	C	11J
R43	B	C	11K
R46	B	C	10L
R47	B	C	8L
R48	B	C	9L
R50	B	C	8L
R58	B	C	12N
R59	B	C	11N
R65	B	C	12N
R71	B	C	16L
R72	B	C	9L
R73	B	C	9K
R75	B	C	10N
R77	B	C	8P
R78	B	C	11J
R79	B	C	12K
R90	B	C	9M
R92	B	C	9N
R93	B	C	8N
R103	B	C	9M
R104	B	C	8N
R105	B	C	10L
R202	B	C	18G
R203	B	C	18G
R204	B	C	18G
R209	B	C	17G
R210	B	C	17G
R211	B	C	17H
R213	B	C	19I
R216	B	C	19H
R220	B	C	19I
R223	B	C	19H
R224	B	C	18I
R225	B	C	15H
R301	B	C	8J
R302	B	C	7K
R303	B	C	6K
R304	B	C	7K
R305	B	C	6K
R306	B	C	7J
R307	B	C	6L
R308	B	C	6K
R309	B	C	6J
R310	B	C	7J
R311	B	C	6J
R312	B	C	7J
R313	B	C	8J
R314	B	C	8J
R315	B	C	8J
R316	B	C	8J
R321	B	C	8J
R328	B	C	7I
R329	B	C	7J
R2001	B	C	12I
R2002	B	C	13I
R2003	B	C	13K
R2004	B	C	14J
R2005	B	C	15K
R2006	B	C	15K
R2007	B	C	15K
R2008	A	D	14K
R2009	B	C	15K
R2010	B	C	15K
R2011	B	C	16M
R2012	B	C	16M
R2013	B	C	13O
R2014	B	C	13O
R2015	B	C	13O
R2016	B	C	13O
R2017	B	C	13O
R2018	B	C	12O
R2019	B	C	12O
R2051	B	C	9O
R2052	B	C	9O
R2053	B	C	9O
R2054	B	C	10O
R2055	B	C	11O
R2056	B	C	11O
R2057	B	C	11O
R2058	B	C	11O
R2059	B	C	12O
R2060	B	C	12O
R2102	B	C	7G
R2201	A	D	7G
R2202	B	C	13K
R2203	B	C	14K
R2204	B	C	14K
R2205	B	C	14J
R2206	B	C	14J
R2207	B	C	14J
R2208	B	C	15J
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R2213	B	C	15K
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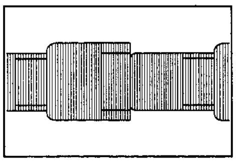
R2217	B	C	15K
R2218	B	C	15L
R2219	B	C	15L
R2220	B	C	15L
R2222	B	C	15L
R2223	B	C	15L
R2224	B	C	15L
R2225	A	D	15L
R2226	B	C	15L
R2227	A	D	15L
R2228	B	C	12K
R2229	B	C	12K
R2230	B	C	14K
R2231	B	C	15K
R2251	B	C	16M
R2252	A	D	16O
R2253	B	C	16O
R2254	A	D	16O
R2255	B	C	15O
R3011	B	C	10G
R3012	B	C	10G
R3013	B	C	10G
R3014	B	C	10G
R3015	B	C	10G
R3017	B	C	10G
R3019	B	C	9G
R3020	B	C	10G
R3021	B	C	10F
R3022	B	C	10F
R3026	B	C	10F
R3027	B	C	10F
R3028	B	C	10F
R3029	A	D	8D
R3030	B	C	10E
R3031	B	C	10E
R3032	B	C	10E
R3033	B	C	10E
R3034	B	C	10E
R3035	B	C	9E
R3036	B	C	9E
R3037	B	C	9E
R3038	B	C	9D
R3039	B	C	9D
R3040	B	C	9D
R3041	B	C	9D
R3044	B	C	11D
R3046	B	C	11D
R3047	B	C	10D
R3048	B	C	10D
R3049	B	C	11D
R3050	B	C	11D
R3051	B	C	11D
R3052	B	C	11D
R3053	B	C	11D
R3054	B	C	11D
R3055	B	C	12D
R3056	B	C	12D
R3057	B	C	12D
R3058	B	C	12D
R3059	B	C	12D
R3060	B	C	12D
R3061	B	C	12D
R3062	B	C	12D
R3066	B	C	13D
R3069	B	C	13E
R3071	B	C	13E
R3072	B	C	14E
R3073	B	C	14E
R3074	A	D	15E
R3075	B	C	14E
R3076	B	C	14E
R3077	B	C	14E
R3078	B	C	14E
R3079	B	C	14E
R3080	B	C	14E
R3081	B	C	14E
R3083	B	C	14E
R3085	B	C	14F
R3086	B	C	14F
R3087	B	C	14F
R3088	B	C	13F
R3089	B	C	13F
R3090	A	D	14F
R3093	B	C	13F
R3094	B	C	14G
R3095	B	C	14G
R3104	B	C	13G
R3105	B	C	13G
R3201	B	C	6M
R3202	B	C	6M
R3203	B	C	6M
R3204	B	C	6M
R3205	B	C	12H
R3206	B	C	9F
R3207	B	C	19I
R3208	A	D	17F
R3209	A	D	17F
R3210	B	C	8G
R3211	B	C	8G
R3212	A	D	8F
R3213	B	C	9E
R3214	B	C	9F
R3215	B	C	9F
R3216	B	C	9F
R3217	B	C	9E
R3218	A	D	7F
R3219	B	C	9E
R3220	B	C	9E
R3221	A	D	8P
R3222	B	C	9F
R3223	B	C	18E
R3224	B	C	18E
R3225	B	C	18C
R3229	B	C	13D
R3230	B	C	14D
R3231	B	C	14D
R3232	B	C	10F
R3234	B	C	9E
R3235	B	C	11D
R3236	B	C	11D
R3237	B	C	10G
R3238	B	C	10G
R3239	B	C	10G
R3240	B	C	10G
R3242	B	C	10F
R3244	B	C	5B
R3245	B	C	5B
R4001	A	D	13H
R4003	B	C	11G
R4004	B	C	11G
R4005	B	C	11G
R4007	A	D	10H
R4008	B	C	9F
R4009	B	C	13G
R4010	B	C	13G
R4011	B	C	13G
R4012	B	C	13G
R4013	B	C	12H
R4014	B	C	14G
R4015	B	C	13G
R4016	B	C	14G
R4017	B	C	13G
R4018	B	C	13G
R4019	B	C	12G
R4020	B	C	9H
R4021	B	C	12G
R5101	A	D	4M
R5102	A	D	4M
R5103	A	D	3M
R5104	A	D	1N
R5106	A	D	2L
R5107	A	D	3K
R5108	B	C	3L
R5109	A	D	3L
R5110	B	C	3L
R5111	B	C	3K
R5112	B	C	3K
R5113	B	C	4L
R5301	A	D	1C
R5302	B	C	4F
R5303	B	C	4F
R5304	A	D	1F
R5305	B	C	4H
R5306	B	C	3E
R5307	B	C	1H
R5308	B	C	3H
R5309	B	C	3G
R5310	B	C	3F
R5311	B	C	3F
R5313	A	D	1D
R5314	A	D	2D
R5317	B	C	4F
R5318	B	C	4F
R5319	B	C	2E
R5321	B	C	4H
R5322	B	C	3H
R5323	B	C	3H
R5324	A	D	4E
R5326	B	C	3E
R5327	B	C	3E
R6030	B	C	21K
R6031	B	C	21K
R6032	B	C	21J
R6033	B	C	21I
R6050	A	D	21N
R6051	B	C	21P
R6052	B	C	21O
R6080	B	C	21J
R6081	B	C	21J
R6082	B	C	21J
R6083	B	C	22J
R7001	B	C	10B
R7002	B	C	11B
R7003	B	C	10B
R7004	A	D	10B
R7005	A	D	14A
R7006	B	C	6B
R7007	B	C	7B
R7008	B	C	7B
R7009	B	C	2B
R7010	B	C	2C
R7013	B	C	15A
R7014	A	D	8B
R7015	A	D	8B
R7017	A	D	10B
R7020	B	C	15A
R7021	B	C	17B
R7022	B	C	15A
R7023	B	C	6B
R7024	B	C	5B
R7025	B	C	4B
R7030	B	C	15A
R7031	B	C	6B
R7032	B	C	5B
R7033	B	C	2B
R7034	B	C	1B
R7035	B	C	2B
R7036	B	C	3B
R7037	B	C	3B
R7040	B	C	16A
R7041	B	C	15A
R7101	B	C	19K
R7102	B	C	19K
R7103	B	C	11P
R7105	B	C	13P
R7106	B	C	13P
R7107	B	C	13P
R7108	A	D	10P
R7110	B	C	14P
R7111	B	C	13P
R7112	B	C	18N
R7113	B	C	15P
R7114	B	C	17P
R7115	B	C	17P
R7116	B	C	18P
R7117	A	D	19P
R7119	B	C	18P
R7120	B	C	18P
R7121	B	C	21P
R7122	B	C	21P
R7123	B	C	20O
R7124	B	C	20P
R7126	B	C	20O
R7127	B	C	19O
R7128	B	C	20O
R7130	B	C	20P
R7131	B	C	20K
R7132	A	D	20J
R7133	A	D	20J
R7134	B	C	20K
R7135	A	D	18J
R7136	B	C	19M
R7137	B	C	19M
R7140	B	C	20N
R7141	B	C	20N
R7142	B	C	20N
R7160	B	C	18B
R7161	B	C	19A
R7162	B	C	19B
R7163	B	C	21B
R7167	B	C	19L
R7171	A	D	14M
R7202	B	C	21G
R7203	B	C	21G
R7204	A	D	21G
SWITCH			
S3001	A	D	18C
S7001	A	D	22B
S7002	A	D	18B
S7004	A	D	7B
S7006	A	D	6B
S7008	A	D	5B
S7010	A	D	4B
S7011	A	D	4B
S7012	A	D	3B
S7013	A	D	2B
S7014	A	D	2B
S7015	A	D	1B
S7016	A	D	17B
TEST POINT			
TP106	A	D	6P
TP111	A	D	5P
TP2253	A	D	6P
TP3901	B	C	11D
TP3902	B	C	11D
TP3903	B	C	12D
TP3904	B	C	13E
TP3905	B	C	13D
TP3906	B	C	12D
TP3907	B	C	12D
TP3908	B	C	12D
TP4001	A	D	6P
TP7001	A	D	3A
TPGND	A	D	4A
OTHER			
CP4001	A	D	5M
CP5301	A	D	4D
CP5302	A	D	6L
DI7001	A	D	12A
F5001	A	D	2P
FC5001	A	D	2P
FC5002	A	D	3P
K2251	B	C	15N
K2252	B	C	15O
K2253	B	C	15N
K5101	A	D	2K
K5102	A	D	1M
LF5001	A	D	3O
LF5002	A	D	3N
PC3001	A	D	16F
PC3002	A	D	8G
PC5101	A	D	4K
T2051	A	D	9O
T5001	A	D	1K
TU6001	A	D	22P
VA5001	A	D	2O
WR1	A	D	12L
X1	A	D	11K
X2	A	D	11K
X3001	A	D	13D
X3002	A	D	13E

WAVEFORMS

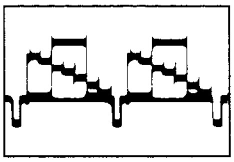
— VIDEO/AUDIO —

WF1 IC1-1



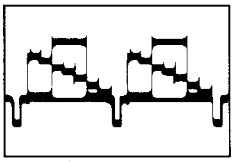
PB 0.5 Vp-p
20 mV/5 msec/DIV

WF2 IC1-11



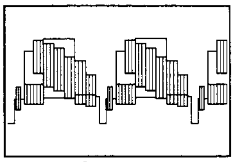
REC/PB 0.48 Vp-p
10 mV/20 µsec/DIV

WF3 IC1-13



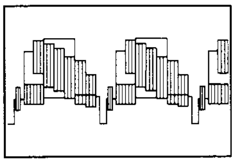
REC/PB 0.48 Vp-p
10 mV/20 µsec/DIV

WF4 IC1-22



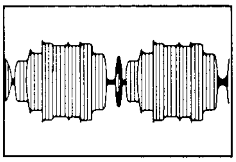
REC 0.96 Vp-p
20 mV/20 µsec/DIV

WF5 IC1-27



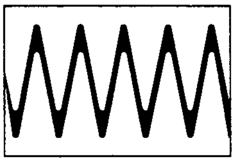
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF6 IC1-30



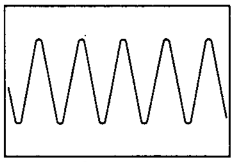
PB 0.6 Vp-p
20 mV/20 µsec/DIV

WF7 IC1-48



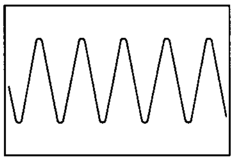
PB 0.5 Vp-p
10 mV/0.5 msec/DIV

WF8 IC1-52



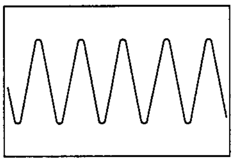
REC 0.11 Vp-p
2 mV/0.5 msec/DIV

WF9-1 IC1-62



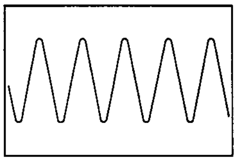
REC 0.9 Vp-p
20 mV/0.5 msec/DIV

WF9-2 IC1-62



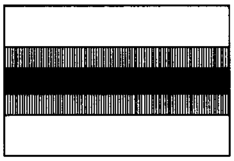
PB 0.88 Vp-p
20 mV/0.5 msec/DIV

WF10 IC1-80



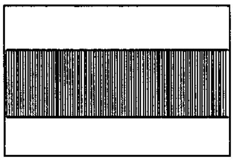
REC 0.2 Vp-p
5 mV/0.5 msec/DIV

WF11 IC1-97



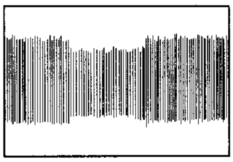
REC 1.1 Vp-p
50 mV/0.5 msec/DIV

WF12 IC1-105



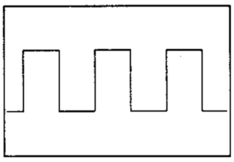
REC 1.4 Vp-p
50 mV/1 msec/DIV

WF13 TP2253
A.PB.FM



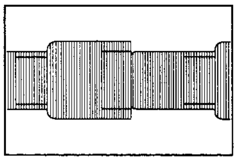
PB 0.44 Vp-p
20 mV/5 msec/DIV

WF14 TP111
D.FF



REC/PB 3.5 Vp-p
0.1 V/10 msec/DIV

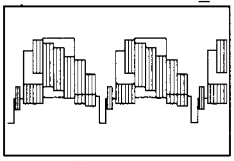
WF15 TP106
PB.FM



PB 0.5 Vp-p
20 mV/2 msec/DIV

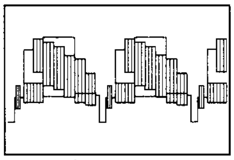
— ON SCREEN —

WF1 IC201-21
CV_IN



REC/PB 2.1 Vp-p
50 mV/20 µsec/DIV

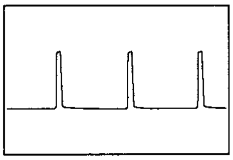
WF2 IC201-19
CVOUT



REC/PB 2.1 Vp-p
50 mV/20 µsec/DIV

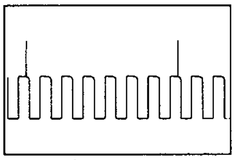
— SYSCON —

WF1 CN3001-4
D.PG



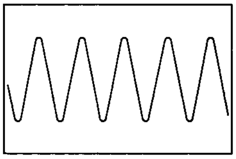
REC/PB 4.6 Vp-p
0.2 V/10 msec/DIV

WF2 CN3001-5
D.FG



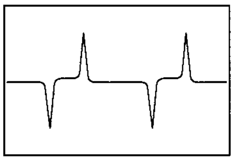
REC/PB 4.5 Vp-p
0.1 V/5 msec/DIV

WF3 CN3003-2
CAP_FG



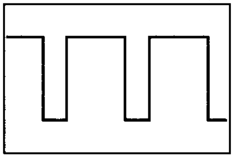
REC/PB 2.2 Vp-p
50 mV/0.5 msec/DIV

WF4 TP4001
CTL. P



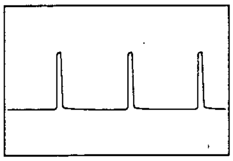
PB 2.4 Vp-p
50 mV/10 msec/DIV

WF5 IC3001-1
CTL(+)



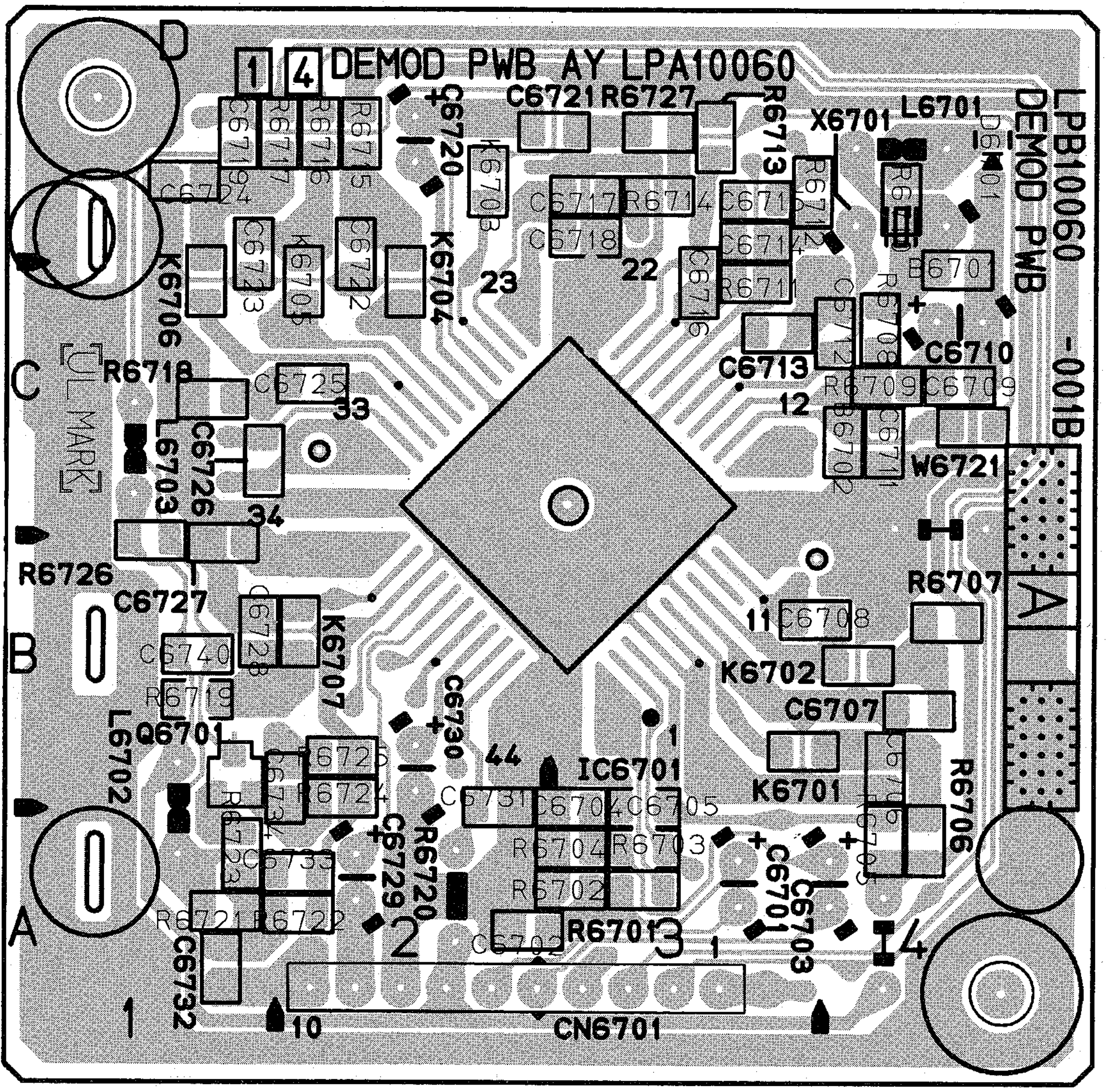
REC 3.6 Vp-p
0.1 V/10 msec/DIV

WF6 IC3001-98
C.SYNC



REC/PB 4.2 Vp-p
0.1 V/20 µsec/DIV

4.11 DEMODULATOR CIRCUIT BOARD



D
1
4
DEMOD PWB AY LPA10060
LPB10060 -001B
DEMOD PWB
C6719
R6717
R6716
R6715
C6720
C6721
R6727
R6713
X6701
L6701
D6701
C6724
R6703
C6717
R6714
C6715
R6712
R6710
C6718
C6714
C6723
K6705
C6722
K6704
23
22
C6716
R6711
B6701
K6706
C6712
R6708
C6710
C6713
C
R6718
C6725
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R6709
C6709
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UL MARK
L6703
C6726
R6702
C6711
W6721
34
R6726
R6707
C6727
C6728
K6707
11
C6708
A
B
C6740
K6702
R6719
C6730
C6707
L6702
Q6701
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IC6701
R6725
C6734
R6724
C6731
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C6705
K6701
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K6703
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C6729
R6720
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R6703
C6701
C6703
R6723
C6733
R6702
R6721
R6722
2
C6702
R6701
3
4
A
C6732
1
10
CN6701

COMPONENT PARTS LOCATION GUIDE <DEMODULATOR>

REF.NO.	LOCATION		
CAPACITOR			
C6701	A	D	3A
C6702	B	C	2A
C6703	A	D	4A
C6704	B	C	3B
C6705	B	C	3B
C6706	B	C	4B
C6707	B	C	4B
C6708	B	C	3B
C6709	B	C	4C
C6710	A	D	4C
C6711	B	C	4C
C6712	B	C	4C
C6713	B	C	3C
C6714	B	C	3D
C6715	B	C	3D
C6716	B	C	3C
C6717	B	C	3D
C6718	B	C	3D

REF.NO.	LOCATION		
C6719	B	C	1D
C6720	A	D	2D
C6721	B	C	3D
C6722	B	C	2D
C6723	B	C	1D
C6724	B	C	1D
C6725	B	C	2C
C6726	B	C	1C
C6727	B	C	1B
C6728	B	C	1B
C6729	A	D	2A
C6730	A	D	2B
C6731	B	C	2B
C6732	B	C	1A
C6733	B	C	2A
C6734	B	C	2B

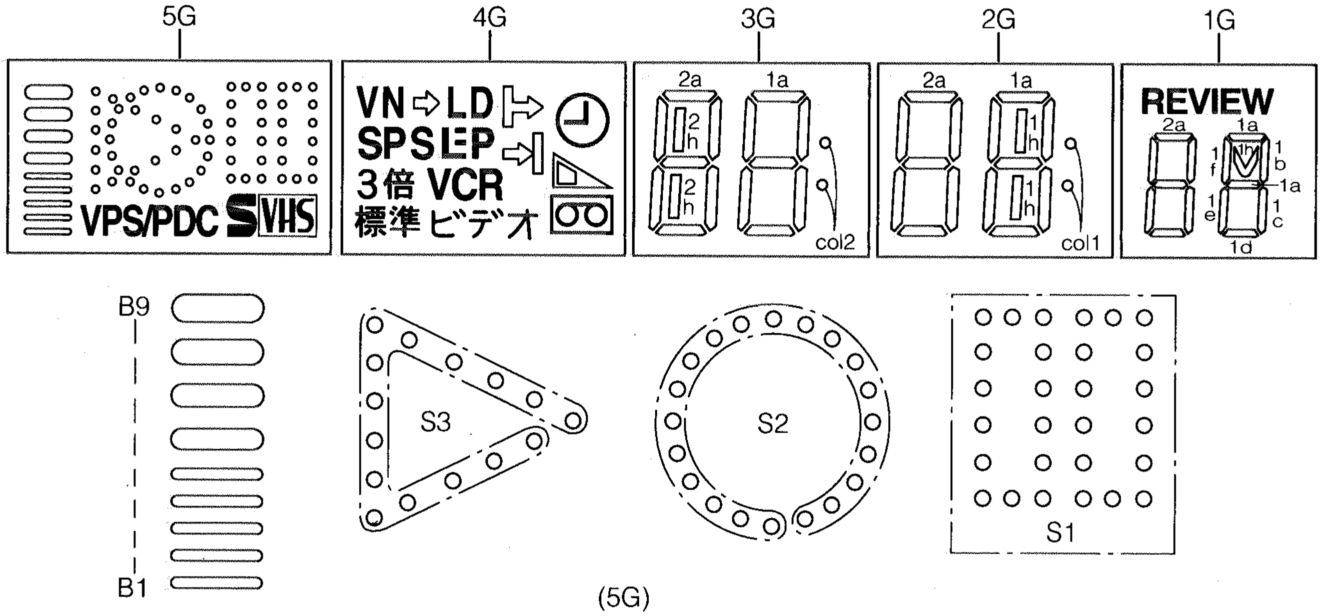
REF.NO.	LOCATION		
CONNECTOR			
CN6701	A	D	3A
DIODE			
D6701	B	C	4D
IC			
IC6701	B	C	3C
COIL			
L6701	A	D	4D
L6702	A	D	1A
L6703	A	D	1C
TRANSISTOR			
Q6701	B	C	1B

REF.NO.	LOCATION		
RESISTOR			
R6701	B	C	3A
R6702	B	C	3A
R6703	B	C	3A
R6704	B	C	3A
R6705	B	C	4A
R6706	B	C	4A
R6707	B	C	4B
R6708	B	C	4C
R6709	B	C	4C
R6710	B	C	4D
R6711	B	C	3C
R6712	B	C	3D
R6713	B	C	3D
R6714	B	C	3D
R6715	B	C	2D
R6716	B	C	2D
R6717	B	C	2D
R6718	B	C	1C

REF.NO.	LOCATION		
R6719	B	C	1B
R6720	A	D	2A
R6721	B	C	1A
R6722	B	C	2A
R6723	B	C	1A
R6724	B	C	2B
R6725	B	C	2B
R6726	B	C	1B
R6727	B	C	3D
OTHER			
K6701	B	C	3B
K6702	B	C	4B
K6703	B	C	2D
K6704	B	C	2C
K6705	B	C	2C
K6706	B	C	1C
K6707	B	C	2B
X6701	A	D	4D

4.12 FDP GRID ASSIGNMENT AND ANODE CONNECTION

GRID ASSIGNMENT


5G
4G
3G
2G
1G
VN ⇨ LD
SP S L:P
3倍 VCR
標準 ビデオ
VPS/PDC
SVHS
2a
1a
2
h
1
h
col2
col1
REVIEW
f
b
e
c
1d
B9
B1
S3
S2
S1
(5G)

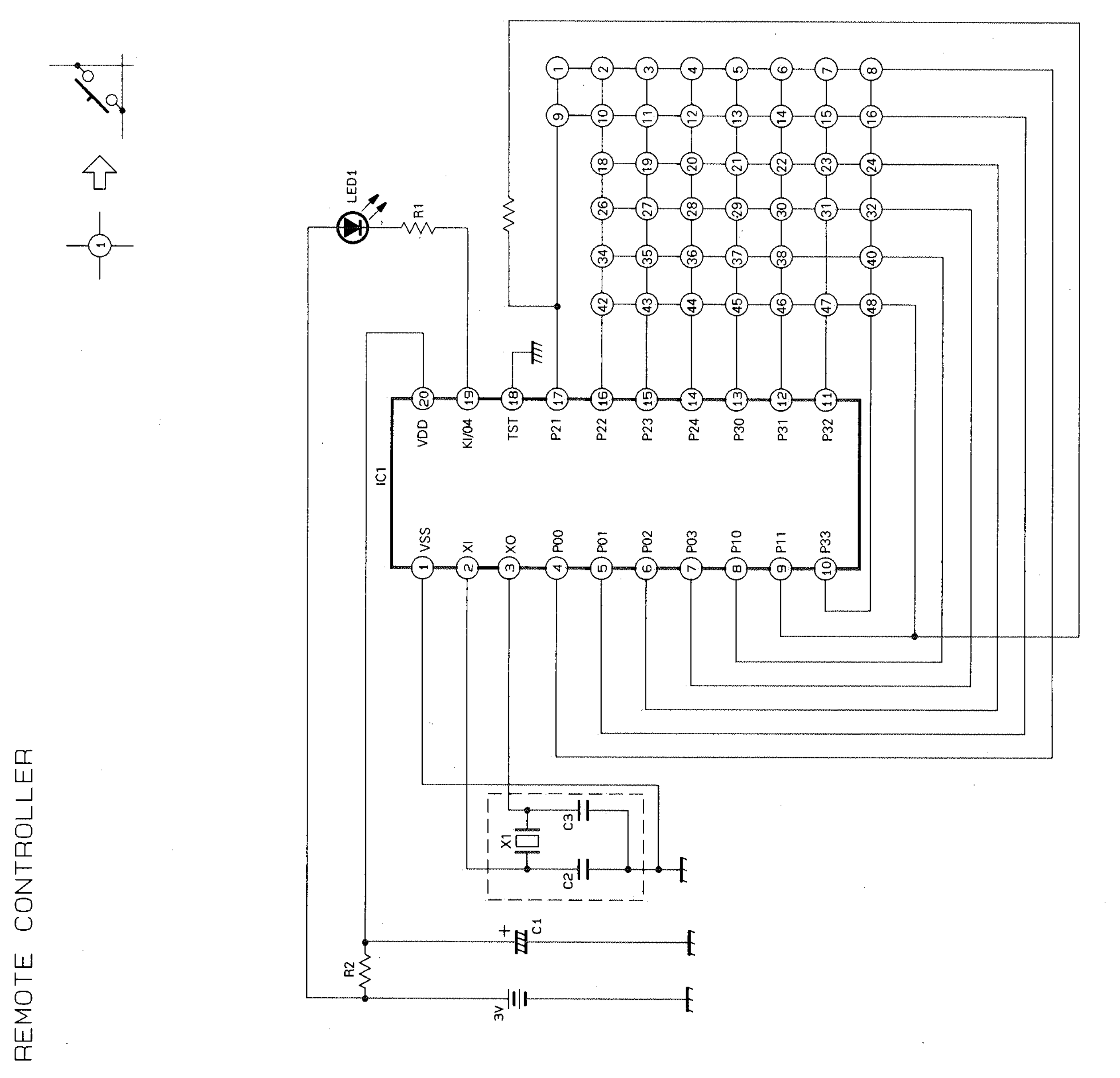
ANODE CONNECTION

	5G	4G	3G	2G	1G
P 1	S2	↦	1a	1a	1a
P 2	S1	⇥	1b	1b	1b
P 3	S3	3倍	1f	1f	1f
P 4	VPS/PDC	標準	1g	1g	1g
P 5	SVHS	🕒	1c	1c	1c
P 6	—	◺	1e	1e	1e
P 7	—	📼	1d	1d	1d
P 8	B9	VCR	col2	1h	1h
P 9	B8	ビデオ	2a	2a	2a
P10	B7	⇨	2b	2b	2b
P11	B6	VN	2f	2f	2f
P12	B5	LD	2g	2g	2g
P13	B4	SP	2c	2c	2c
P14	B3	S (SEP)	2e	2e	2e
P15	B2	: (SEP)	2d	2d	2d
P16	B1	LP (SEP)	2h	col1	REVIEW

4.13 REMOTE CONTROL SCHEMATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

Key No.	Key Name
1	TV
2	PROG
3	⊕ ?(PROG CHECK)
4	ENTREE
5	30 SEC ⏫
6	PR −
7	DATE −
8	- - : - -
9	● (REC)
10	◀◀ ⏬ (REW)
11	PR +
12	START/DEBUT +
13	STOP/FIN +
14	DATE +
15	START/DEBUT −
16	STOP/FIN −
18	MENU
19	0 / AUX
20	8 / DAILY/QTDN.
21	4
22	▶
23	⁺⧗
24	⊕
26	AUDIO/ 🔈/🔇 (MUTE)
27	▶ (PLAY)
28	X/0000(CANCEL)
29	7 / VSP/PDC
30	⏻/❙ (POWER)
31	5
32	❚❚ (PAUSE)
34	2
35	6
36	TV/VCR
37	▰/▰▰ (SP/LP)
38	⧗
40	◀
42	3
43	⏫ ▶▶ (FF)
44	■ (STOP)
45	RE-VIEW
46	1
47	9 / WEEKLY/HEBDO
48	OK
9+27	REC START
9+32	REC PAUSE
1+30	POWER
1+36	TV/VCR
1+26	MUTE
1+37	MAIN/SUB
1+38	TV ⊿ −
1+40	TV PR +
1+23	TV ⊿ +
1+22	TV PR −


REMOTE CONTROLLER
LED1
R1
R2
C1
C2
C3
X1
3V
IC1
VDD
KI/04
TST
P21
P22
P23
P24
P30
P31
P32
VSS
XI
XO
P00
P01
P02
P03
P10
P11
P33
1
2
3
4
5
6
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48
+

4.14 VOLTAGE CHARTS

<VIDEO/AUDIO>

MODE PIN NO.	REC	PLAY
IC1		
1	1.4	2.1
2	2.9	2.9
3	2.5	2.5
4	1.9	1.4
5	1.9	1.5
6	2.4	2.1
7	1.5	0.8
8	0	0
9	2.6	3.0
10	2.5	2.5
11	3.0	3.0
12	2.8	2.5
13	3.0	3.0
14	2.3	2.3
15	0	0
16	2.8	2.8
17	1.5	1.5
18	2.8	2.8
19	0	2.6
20	2.8	2.8
21	2.0	2.0
22	2.8	2.8
23	2.8	2.8
24	5.0	5.0
25	0.4	0.4
26	0	0
27	2.3	2.3
28	2.3	2.3
29	1.9	1.9
30	2.1	2.1
31	0	0
32	2.7	2.7
33	5.0	5.0
34	2.7	2.2
35	5.0	5.0
36	2.7	2.7
37	2.3	2.3
38	-	-
39	1.2	1.2
40	-	-
41	2.5	2.5
42	2.2	2.2
43	0	0
44	2.2	2.2
45	4.8	4.8
46	4.2	4.2
47	2.7	2.7
48	2.5	2.5
49	5.0	5.0
50	2.5	2.5
51	2.8	2.8
52	2.3	2.3
53	2.3	2.3
54	2.4	2.4
55	2.1	2.1
56	0.5	0.5
57	2.3	2.3
58	8.2	8.2
59	4.8	4.8
60	4.2	4.2
61	4.1	4.1
62	4.1	4.1
63	2.3	2.3
64	2.3	2.3
65	1.5	1.5
66	3.0	3.0
67	4.2	4.2
68	4.2	4.2
69	2.3	2.3
70	0	0
71	0.3	0.3
72	0.2	0.2
73	0.2	0.2
74	2.3	2.3
75	2.5	2.5
76	0	0
77	2.5	2.5
78	0.3	0.3
79	0.2	0.2
80	0.2	0.2
81	2.3	2.3
82	0.7	0.7
83	0	0
84	2.3	2.3
85	2.3	2.3
86	2.2	2.2
87	1.6	1.8
88	2.3	2.3
89	2.3	2.3
90	2.3	2.3
91	0	0
92	0	0
93	0	2.4
94	0	1.5
95	0	0
96	2.4	2.4
97	2.7	2.3
98	2.5	2.3
99	4.9	4.9
100	5.0	5.0
101	0	0
102	0	0
103	0	0
104	2.3	2.3
105	2.3	2.3
106	2.3	2.3
107	4.9	4.9
108	0	0
109	0	0
110	0	0
111	0	1.6
112	2.5	2.5
113	0.5	1.0
114	0	0
115	2.5	2.5
116	2.5	2.5
117	2.5	2.5
118	0	0
119	2.5	2.5
120	4.6	4.6
Q1		
E	2.4	2.4
C	2.4	2.4
B	0	0
Q2		
E	2.4	2.4
C	2.4	2.4
B	0	0
Q3		
E	0	0
C	0	0
B	0.7	0.7
Q4		
E	0	0
C	0	0
B	0.7	0.7
Q22		
E	1.7	1.7
C	5.0	5.0
B	2.3	2.3
Q38		
E	2.3	2.3
C	5.0	5.0
B	3.0	3.0
Q41		
E	-	-
C	-	-
B	-	-
Q2001		
E	-10.8	0
C	0	0
B	-17.3	0.7
Q2002		
E	-10.8	0
C	0	0
B	-17.0	0.7
Q2003		
E	5.0	5.0
C	-17.0	4.9
B	4.9	0
Q2051		
E	0	0
C	7.0	0.3
B	0.5	0.3
Q2052		
E	10.5	10.6
C	10.3	0.4
B	9.8	10.6
Q2053		
E	0	0
C	0	10.6
B	4.9	0
Q2054		
E	10.4	0.4
C	10.2	0.2
B	9.6	0.4
Q2055		
E	0	0
C	0	0.5
B	4.9	0
Q2251		
E	4.9	4.9
C	1.6	1.8
B	4.9	4.9
Q2252		
E	0	0
C	0	0
B	4.8	4.8
CN1		
1	0	0
2	0	0
3	0	0
4	0	0
5	2.4	2.3
6	2.4	2.3
7	2.4	2.3
8	2.4	2.3
9	2.7	2.3
10	2.7	2.3
11	2.7	2.3
CN2001		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	2.2	2.4
7	2.4	2.4
CN2002		
1	0	0
2	0	0

<ON SCREEN>

MODE PIN NO.	REC	PLAY
IC201		
1	0	0
2	2.6	2.6
3	4.8	4.8
4	0	0
5	4.4	4.4
6	2.4	2.4
7	2.4	2.4
8	5.0	5.0
9	3.0	3.0
10	4.3	4.3
11	-	1.0
12	5.0	5.0
13	2.8	2.8
14	2.8	2.8
15	0	0
16	1.2	1.2
17	0	0
18	5.0	5.0
19	2.3	2.3
20	0	0
21	2.3	2.3
22	0.5	0.5
23	5.0	5.0
24	2.8	2.8
25	2.5	2.5
26	5.0	5.0
27	4.5	4.5
28	3.6	3.6
29	5.0	5.0
30	5.0	5.0
Q201		
E	2.3	2.3
C	0	0
B	1.6	1.6

<SYSCON>

MODE PIN NO.	REC	PLAY
IC3001		
1	2.7	2.4
2	0	0
3	1.8	2.4
4	2.4	2.4
5	2.4	2.4
6	2.5	2.5
7	2.4	2.4
8	2.4	2.4
9	4.8	4.8
10	4.9	4.9
11	0.4	0.4
12	0.4	0.4
13	0	0
14	0	1.4
15	4.9	4.9
16	0	0
17	4.3	4.1
18	0	0
19	0	0
20	0	1.7
21	4.1	4.1
22	4.4	4.4
23	0	0
24	4.8	4.8
25	4.9	4.9
26	4.9	4.9
27	4.9	4.9
28	0	0
29	4.9	4.9
30	4.3	4.3
31	4.9	4.9
32	0	0
33	0	0
34	4.3	4.3
35	0	0
36	0	0
37	0	0
38	4.8	4.8
39	4.8	4.8
40	0	0
41	2.7	2.7
42	0	0
43	0	0
44	0	0
45	4.9	4.9
46	0.5	0.5
47	0.5	0.5
48	4.9	4.9
49	4.2	4.2
50	4.8	4.8
51	4.9	4.9
52	-	1.0
53	4.3	4.3
54	-	-
55	3.1	3.1
56	0	0
57	0	0
58	3.1	3.1
59	-	-
60	0	0
61	0	0
62	0	0
63	0	0
64	-	-
65	-	-
66	-	-
67	-	-
68	0	0
69	-	-
70	4.8	4.8
71	4.8	4.8
72	4.8	4.8
73	4.8	4.8
74	0	0
75	4.5	4.5
76	4.5	4.5
77	5.0	5.0
78	3.1	3.1
79	0	4.8
80	0	0
81	0	0
82	4.9	4.9
83	0	0
84	0	0
85	0	0
86	4.3	4.3
87	4.9	4.9
88	0	0
89	4.8	4.8
90	0	0
91	0	0
92	0	0
93	4.9	4.9
94	0	0
95	0	0
96	0	0
97	0	0
98	0.3	0.3
99	0	-
100	-	-
101	2.5	2.5
102	1.2	1.2
103	0	0
104	4.8	0
105	4.9	0
106	0	0
107	0	0
108	1.5	1.5
109	4.9	4.9
110	0	0
111	0	0
112	2.4	2.4
IC3002		
1	4.9	4.9
2	4.9	4.9
3	0	0
IC3003		
1	0	0
2	0	0
3	0	0
4	0	0
5	4.5	4.5

MODE PIN NO.	REC	PLAY
6	4.5	4.5
7	0	0
8	4.9	4.9
IC3004		
1	11.9	11.9
2	0.4	0.4
3	0	0
4	0.3	0.3
5	11.9	11.9
6	11.9	11.9
7	0	0
8	0	0
9	0	0
Q3001		
E	0	0
C	11.9	11.9
B	0	0
Q3002		
E	0	0
C	4.1	4.1
Q3003		
E	0	0
C	4.7	4.7
Q3004		
E	0	0
C	0	0
B	0.7	0.7
Q3005		
E	4.8	4.8
C	5.6	5.6
B	5.4	5.4
Q3007		
E	0	0
C	4.7	4.7
B	0	0
Q4001		
E	0	0
C	0	0
B	4.8	4.8
CN3001		
1	11.2	11.2
2	0	0
3	1.4	1.4
4	0	0
5	1.5	1.5
CN3002		
1	0.4	0.4
2	0.4	0.4
CN3003		
1	0	0
2	2.5	2.5
3	2.5	2.5
4	5.0	5.0
5	0	0
6	4.9	4.9
7	-	-
8	11.9	11.9
CN3004		
1	4.9	4.9
2	4.9	4.9
3	0	0
4	0	0

<SW.REG>

MODE PIN NO.	REC	PLAY
IC5301		
1	5.7	5.7
2	5.1	5.1
3	4.8	4.8
4	0	0
5	11.2	11.2

MODE PIN NO.	REC	PLAY
6	10.6	10.6
7	11.9	11.9
8	5.7	5.7
9	1.3	1.3
10	4.2	4.2
Q5101		
D	133.5	131.4
S	-	-
G	-	-
Q5102		
E	0	0
C	-	-
B	-	-
Q5303		
E	4.9	4.9
C	5.6	5.6
B	5.5	5.5
Q5304		
E	-	-
C	-	-
B	-	-
Q5305		
E	-	-
C	-	-
B	-	-
Q5306		
E	11.9	11.9
C	11.3	11.3
B	10.5	10.5
Q5310		
E	0	0
C	0	0
B	4.8	4.8
Q5311		
E	31.1	31.1
C	31.1	31.1
B	30.4	30.4
Q5312		
E	-13.7	-13.7
C	-13.7	-13.7
B	-12.9	-12.9
Q5318		
E	5.6	5.6
C	5.5	5.5
B	1.0	1.0

<TUNER>

MODE PIN NO.	REC	PLAY
IC6080		
1	10.1	10.1
2	1.7	1.7
3	1.2	1.2
4	0	0
5	4.1	4.1
6	4.1	4.1
7	4.1	4.1
8	10.6	10.6
Q6030		
E	0.7	0.7
C	0	0
B	0	0
Q6031		
E	0	0
C	0	0
B	4.4	4.4
Q6032		
E	0	0
C	0	0
B	4.4	4.4
CN6701		
1	0	0

MODE PIN NO.	REC	PLAY
2	4.5	4.5
3	4.5	4.5
4	4.4	4.4
5	0.3	0.3
6	0.3	0.3
7	4.9	4.9
8	0	0
9	0	0
10	2.4	2.4

<DISPLAY>

MODE PIN NO.	REC	PLAY
IC7001		
1	4.9	4.9
2	2.1	2.1
3	0	0
4	2.1	2.1
5	4.9	4.9
6	4.9	4.9
7	4.9	4.9
8	4.9	4.9
9	4.9	4.9
10	4.9	4.9
11	4.9	4.9
12	4.3	4.3
13	-	1.0
14	4.9	4.9
15	4.3	4.3
16	-26.1	-26.1
17	-26.1	-26.1
18	-25.9	-25.9
19	-25.9	-25.9
20	-25.9	-25.9
21	-22.0	-22.0
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	-	-
39	-	-
40	-	-
41	-	-
42	-	-
43	-	-
44	4.9	4.9
IC7002		
1	4.9	4.9
2	4.9	4.9
3	0	0
CN7003		
1	0	0
2	5.0	5.0
3	5.0	5.0
4	5.0	5.0
5	5.0	5.0
6	5.0	5.0
7	0	0
8	5.0	5.0
9	5.0	5.0

<TERMINAL>

MODE PIN NO.	REC	PLAY
IC7101		
1	1.6	1.6
2	0	0
3	1.6	1.6
4	10.6	10.6
5	1.9	1.9
6	0	0
7	4.6	4.6
8	10.5	10.5
9	4.6	4.6
10	-	-
11	4.6	4.6
12	-	-
13	4.5	4.5
14	4.5	4.5
15	5.3	5.3
16	4.6	4.6
17	5.3	5.3
18	4.6	4.6
19	10.6	10.6
20	2.4	2.4
21	-	-
22	1.4	1.0
23	2.5	2.5
24	2.0	2.0
Q7106		
E	3.0	3.0
C	0	0
B	2.3	2.3
Q7201		
E	0	0
C	4.9	4.9
B	0	0
CN7102		
1	0	0
2	0	0

<DEMODULATOR>

MODE PIN NO.	REC	PLAY
IC6701		
1	2.4	2.4
2	2.4	2.4
3	4.8	4.8
4	0	0
5	0	0
6	4.9	4.9
7	0	0
8	0	0
9	0	0
10	1.8	1.8
11	0	0
12	2.6	2.6
13	0	0
14	1.5	1.5
15	1.5	1.5
16	0	0
17	0	0
18	2.0	2.0
19	0	0
20	0	0
21	3.2	3.2
22	0	0
23	2.0	2.0
24	2.0	2.0
25	2.0	2.0
26	4.9	4.9
27	0	0
28	4.6	4.6
29	4.5	4.5
30	4.5	4.5
31	0.6	0.6
32	0.6	0.6

MODE PIN NO.	REC	PLAY
33	0.6	0.6
34	0.8	0.8
35	4.9	4.9
36	0	0
37	4.9	4.9
38	2.4	2.4
39	2.4	2.4
40	2.4	2.4
41	2.4	2.4
42	4.9	4.9
43	0	0
44	0	0
Q6701		
E	1.8	1.8
C	4.9	4.9
B	2.6	2.6
CN6701		
1	0	0
2	4.5	4.5
3	4.5	4.5
4	4.4	4.4
5	0.3	0.3
6	0.3	0.3
7	4.9	4.9
8	0	0
9	0	0
10	2.4	2.4

<R.PAUSE>

MODE PIN NO.	REC	PLAY
CN7104		
1	0	0
2	0	0

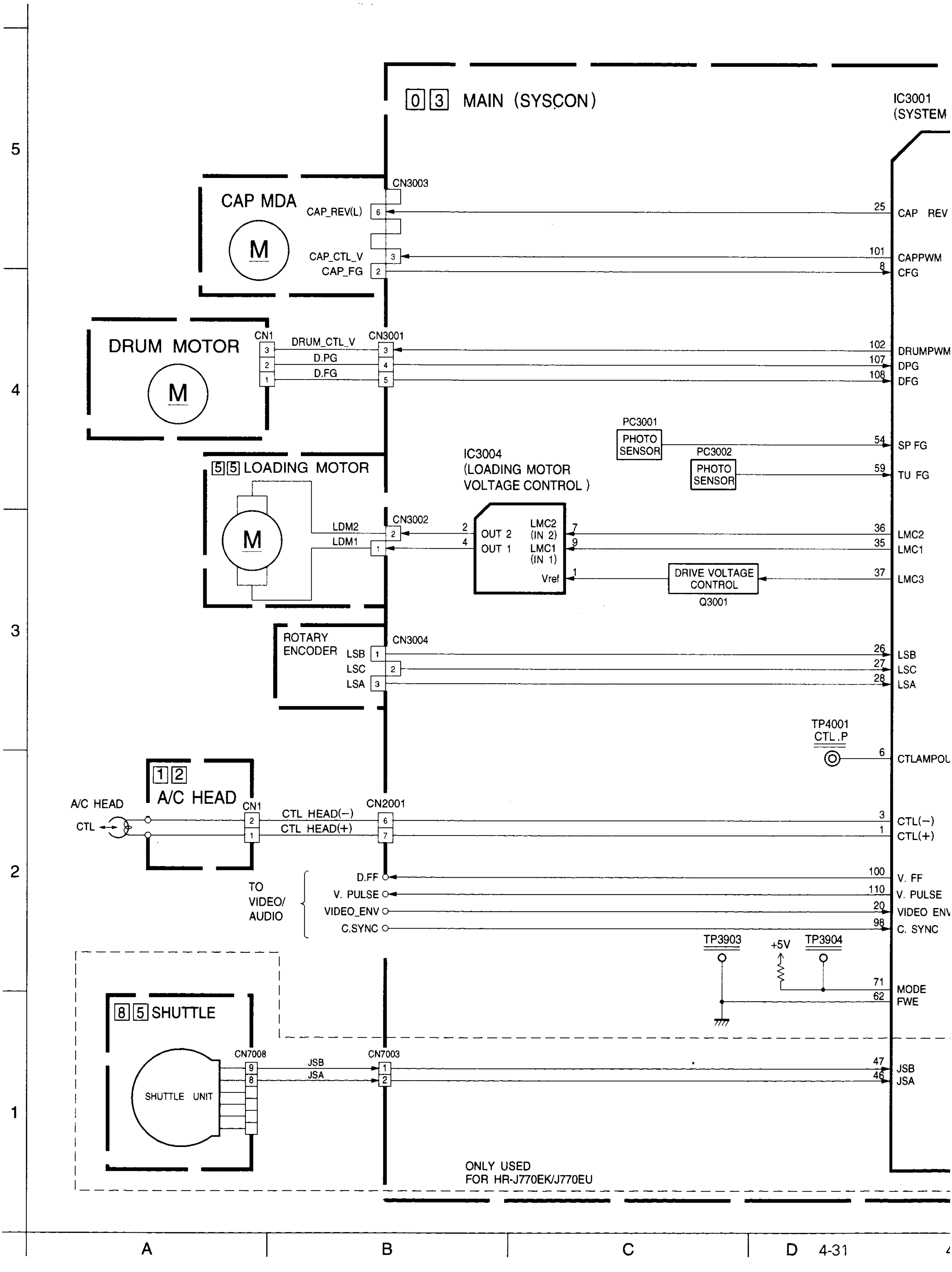
<MINI OPE> [HR-J670EK/J670EU]

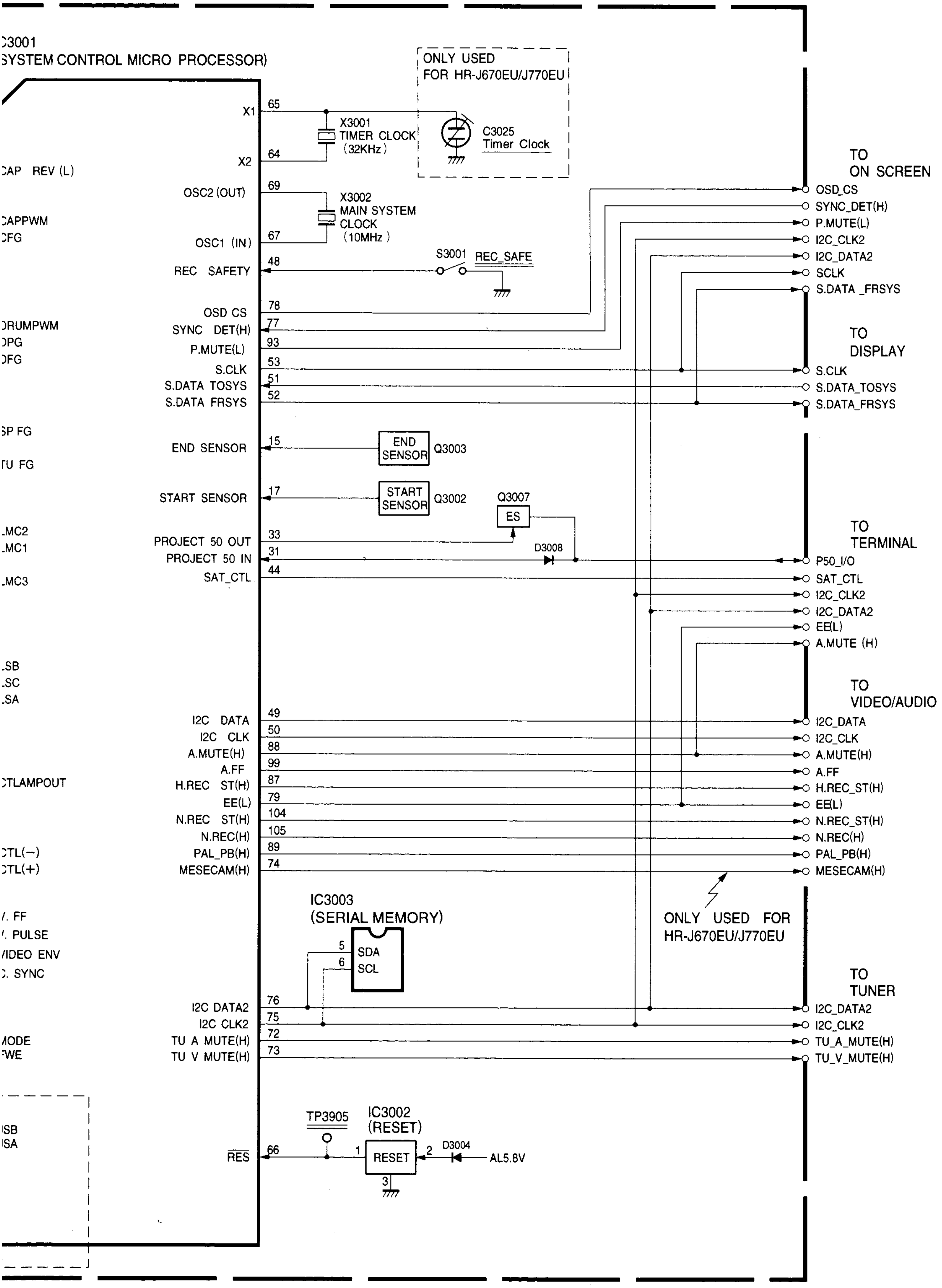
MODE PIN NO.	REC	PLAY
CN7005		
1	5.0	5.0
2	5.0	5.0
3	0	0
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-

<SHUTTLE> [HR-J770EK/J770EU]

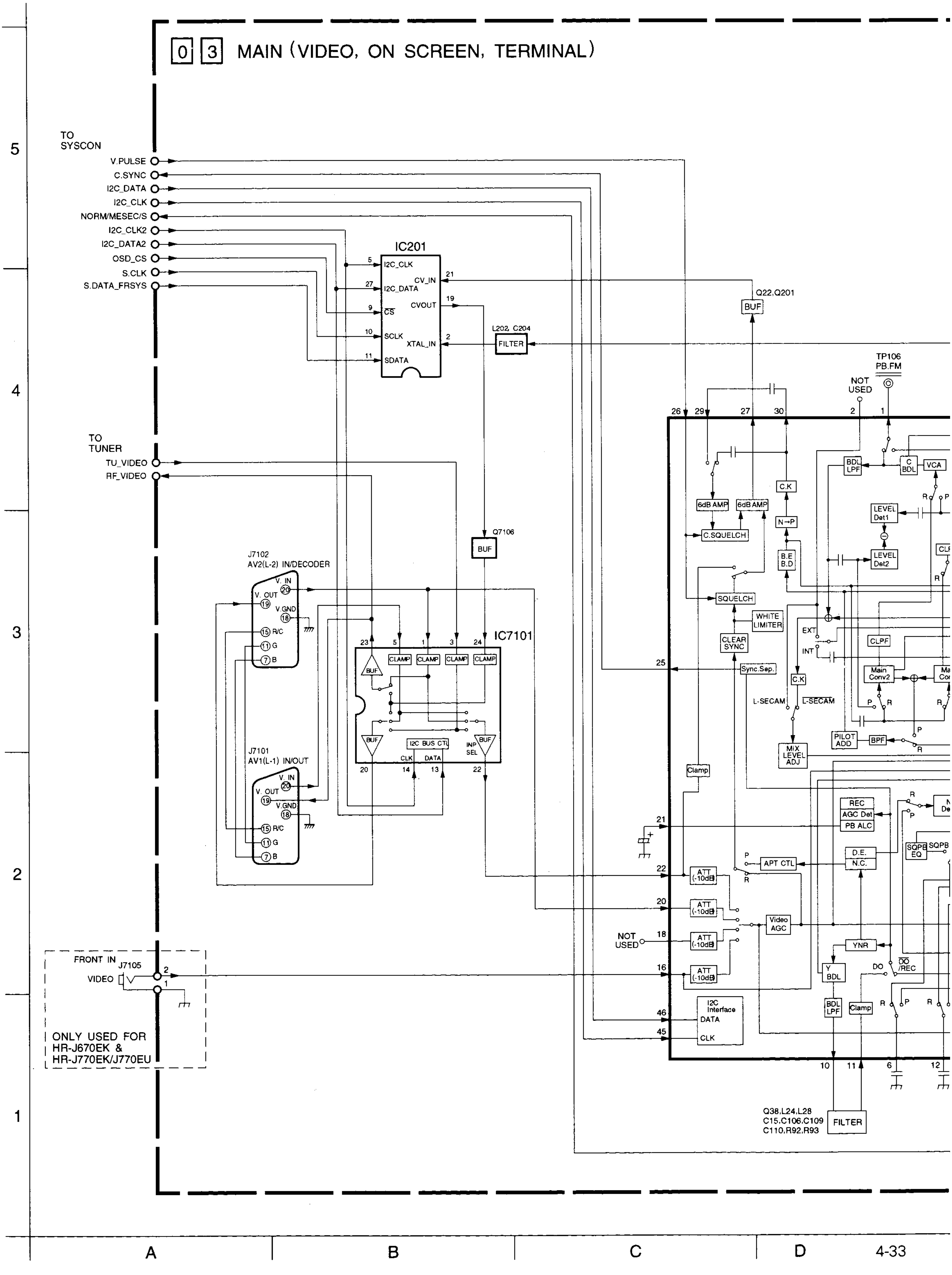
MODE PIN NO.	REC	PLAY
CN7008		
1	-	-
2	-	-
3	0	0
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-

4.15 SYSTEM CONTROL BLOCK DIAGRAM

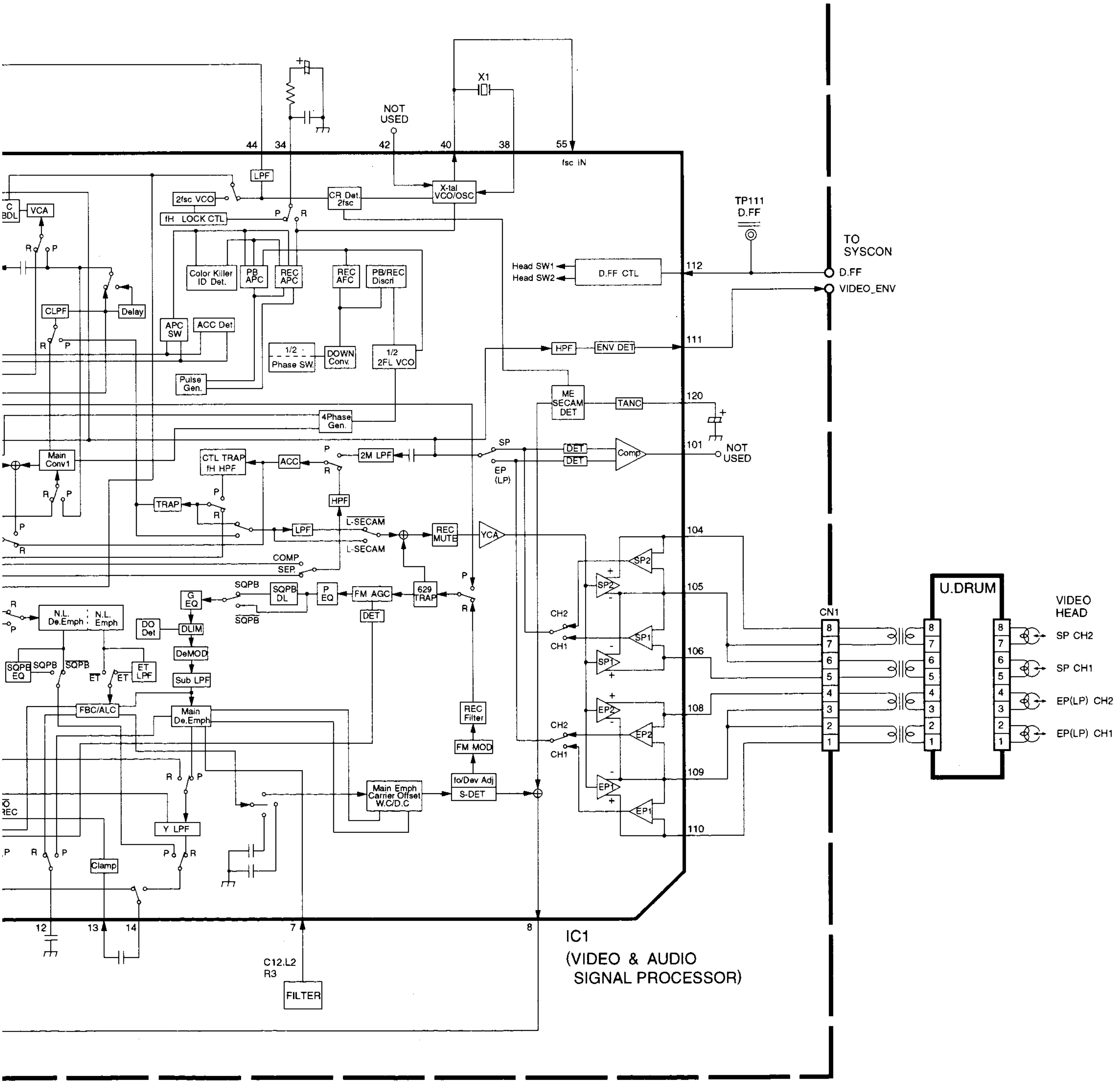

03 MAIN (SYSCON)
IC3001
(SYSTEM
CAP MDA
M
CN3003
CAP_REV(L)
CAP_CTL_V
CAP_FG
25 CAP REV
101 CAPPWM
8 CFG
DRUM MOTOR
CN1
DRUM_CTL_V
D.PG
D.FG
CN3001
102 DRUMPWM
107 DPG
108 DFG
PC3001
PHOTO SENSOR
PC3002
PHOTO SENSOR
54 SP FG
59 TU FG
55 LOADING MOTOR
IC3004
(LOADING MOTOR
VOLTAGE CONTROL)
CN3002
LDM2
LDM1
OUT 2
OUT 1
LMC2 (IN 2)
LMC1 (IN 1)
Vref
DRIVE VOLTAGE CONTROL
Q3001
36 LMC2
35 LMC1
37 LMC3
ROTARY ENCODER
CN3004
LSB
LSC
LSA
26 LSB
27 LSC
28 LSA
TP4001
CTL.P
6 CTLAMPOU
12 A/C HEAD
A/C HEAD
CTL
CN1
CN2001
CTL HEAD(−)
CTL HEAD(+)
3 CTL(−)
1 CTL(+)
TO VIDEO/ AUDIO
D.FF
V. PULSE
VIDEO_ENV
C.SYNC
100 V. FF
110 V. PULSE
20 VIDEO ENV
98 C. SYNC
TP3903
+5V
TP3904
71 MODE
62 FWE
85 SHUTTLE
SHUTTLE UNIT
CN7008
CN7003
JSB
JSA
47 JSB
46 JSA
ONLY USED
FOR HR-J770EK/J770EU
5
4
3
2
1
A
B
C
D


:3001
SYSTEM CONTROL MICRO PROCESSOR)
:AP REV (L)
:APPWM
:FG
DRUMPWM
DPG
DFG
SP FG
TU FG
.MC2
.MC1
.MC3
.SB
.SC
.SA
:TLAMPOUT
:TL(−)
:TL(+)
/. FF
/. PULSE
/IDEO ENV
:. SYNC
/ODE
:WE
ISB
ISA
X1 65
X2 64
X3001
TIMER CLOCK
(32KHz)
ONLY USED
FOR HR-J670EU/J770EU
C3025
Timer Clock
OSC2 (OUT) 69
OSC1 (IN) 67
X3002
MAIN SYSTEM
CLOCK
(10MHz)
REC SAFETY 48
S3001
REC_SAFE
OSD CS 78
SYNC DET(H) 77
P.MUTE(L) 93
S.CLK 53
S.DATA TOSYS 51
S.DATA FRSYS 52
END SENSOR 15
END SENSOR
Q3003
START SENSOR 17
START SENSOR
Q3002
Q3007
ES
PROJECT 50 OUT 33
PROJECT 50 IN 31
D3008
SAT_CTL 44
I2C DATA 49
I2C CLK 50
A.MUTE(H) 88
A.FF 99
H.REC ST(H) 87
EE(L) 79
N.REC ST(H) 104
N.REC(H) 105
PAL_PB(H) 89
MESECAM(H) 74
IC3003
(SERIAL MEMORY)
5 SDA
6 SCL
I2C DATA2 76
I2C CLK2 75
TU A MUTE(H) 72
TU V MUTE(H) 73
ONLY USED FOR
HR-J670EU/J770EU
TP3905
IC3002
(RESET)
RES 66
1 RESET 2
3
D3004
AL5.8V
TO
ON SCREEN
OSD_CS
SYNC_DET(H)
P.MUTE(L)
I2C_CLK2
I2C_DATA2
SCLK
S.DATA _FRSYS
TO
DISPLAY
S.CLK
S.DATA_TOSYS
S.DATA_FRSYS
TO
TERMINAL
P50_I/O
SAT_CTL
I2C_CLK2
I2C_DATA2
EE(L)
A.MUTE (H)
TO
VIDEO/AUDIO
I2C_DATA
I2C_CLK
A.MUTE(H)
A.FF
H.REC_ST(H)
EE(L)
N.REC_ST(H)
N.REC(H)
PAL_PB(H)
MESECAM(H)
TO
TUNER
I2C_DATA2
I2C_CLK2
TU_A_MUTE(H)
TU_V_MUTE(H)

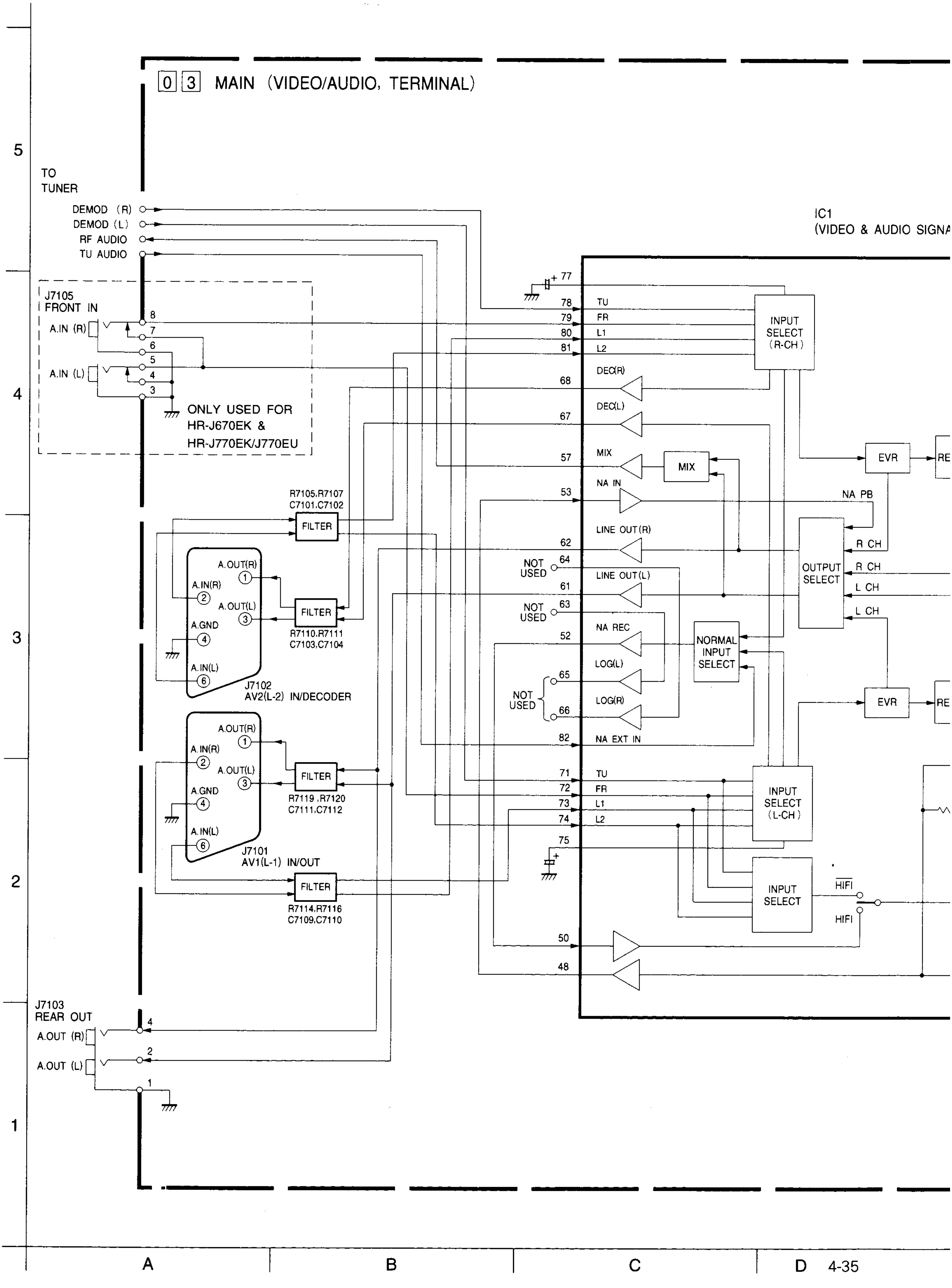
4.16 VIDEO BLOCK DIAGRAM



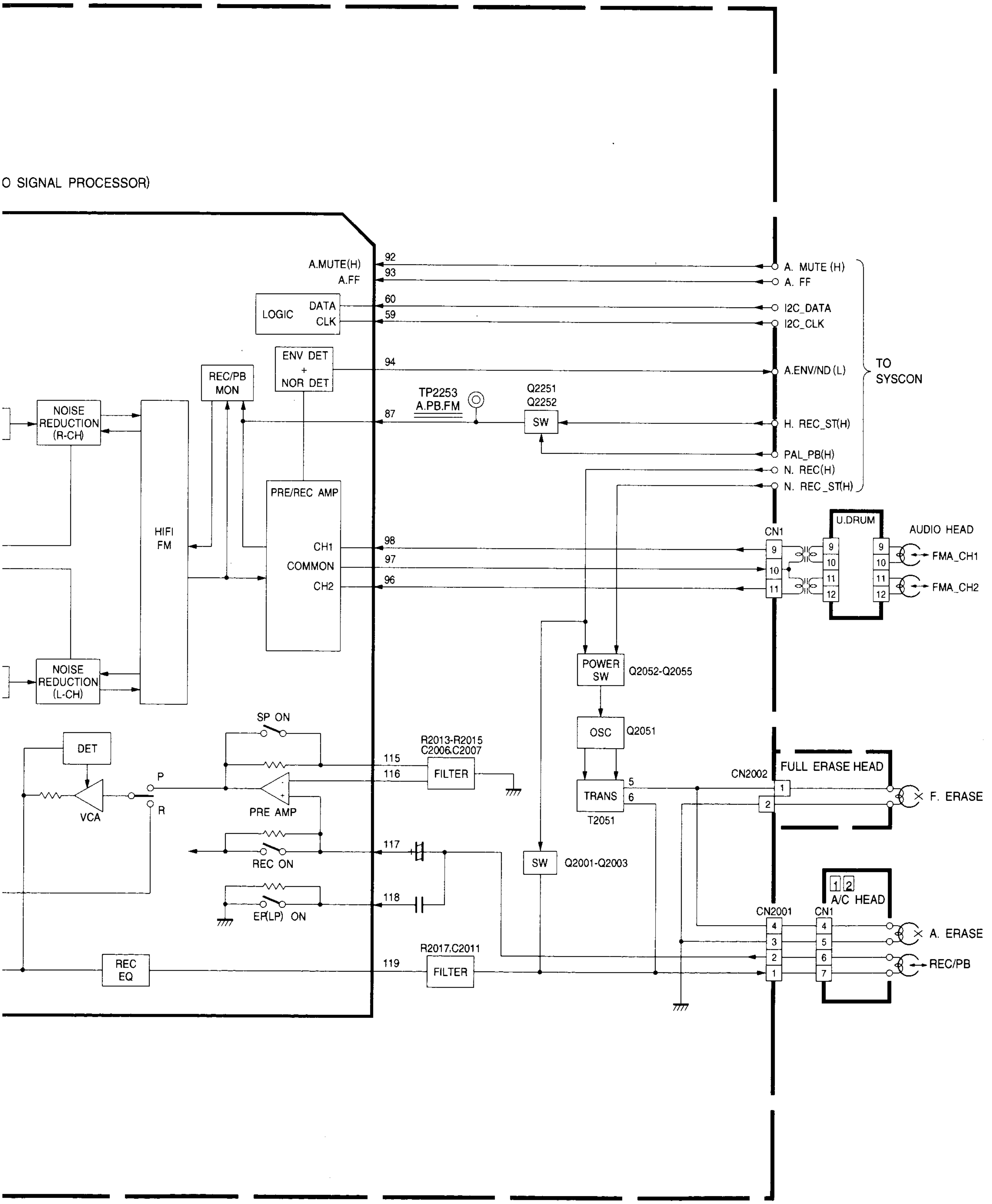
0 3 MAIN (VIDEO, ON SCREEN, TERMINAL)
TO SYSCON
V.PULSE
C.SYNC
I2C_DATA
I2C_CLK
NORM/MESEC/S
I2C_CLK2
I2C_DATA2
OSD_CS
S.CLK
S.DATA_FRSYS
IC201
I2C_CLK
I2C_DATA
CV_IN
CVOUT
CS
SCLK
XTAL_IN
SDATA
L202, C204
FILTER
Q22,Q201
BUF
TO TUNER
TU_VIDEO
RF_VIDEO
Q7106
BUF
J7102
AV2(L-2) IN/DECODER
V. IN
V. OUT
V.GND
R/C
G
B
IC7101
CLAMP
BUF
I2C BUS CTL
CLK
DATA
INP SEL
J7101
AV1(L-1) IN/OUT
FRONT IN
J7105
VIDEO
ONLY USED FOR HR-J670EK & HR-J770EK/J770EU
TP106
PB.FM
NOT USED
6dB AMP
C.SQUELCH
SQUELCH
WHITE LIMITER
CLEAR SYNC
Sync.Sep.
C.K
N→P
B.E B.D
BDL LPF
C BDL
VCA
LEVEL Det1
LEVEL Det2
EXT
INT
CLPF
Main Conv2
L-SECAM
L-SECAM
MIX LEVEL ADJ
PILOT ADD
BPF
Clamp
REC
AGC Det
PB ALC
D.E.
N.C.
SQPB EQ
SQPB
APT CTL
ATT (-10dB)
Video AGC
NOT USED
YNR
Y BDL
DO
DO /REC
BDL LPF
Clamp
I2C Interface
DATA
CLK
Q38,L24,L28
C15,C106,C109
C110,R92,R93
FILTER
P
R
A
B
C
D
1
2
3
4
5


NOT USED
X1
44
34
42
40
38
55
fsc IN
LPF
2fsc VCO
CR Det. 2fsc
X-tal VCO/OSC
fH LOCK CTL
C BDL
VCA
Color Killer ID Det.
PB APC
REC APC
REC AFC
PB/REC Discri
CLPF
Delay
APC SW
ACC Det
1/2 Phase SW
DOWN Conv.
1/2 2FL VCO
Pulse Gen.
4Phase Gen.
Main Conv1
CTL TRAP fH HPF
ACC
2M LPF
HPF
TRAP
LPF
L-SECAM
REC MUTE
YCA
COMP
SEP
SQPB
SQPB DL
G EQ
P EQ
FM AGC
629 TRAP
DET
N.L. De.Emph
N.L. Emph
DO Det
DLIM
DeMOD
Sub LPF
SQPB EQ
ET LPF
FBC/ALC
Main De.Emph
REC Filter
FM MOD
fo/Dev Adj
S-DET
Main Emph Carrier Offset W.C/D.C
Y LPF
Clamp
REC
12
13
14
7
8
C12,L2
R3
FILTER
TP111
D.FF
TO SYSCON
D.FF
VIDEO_ENV
Head SW1
Head SW2
D.FF CTL
112
HPF
ENV DET
111
ME SECAM DET
TANC
120
SP
EP (LP)
DET
Comp
101
NOT USED
SP2
SP1
EP2
EP1
CH2
CH1
104
105
106
108
109
110
CN1
U.DRUM
VIDEO HEAD
SP CH2
SP CH1
EP(LP) CH2
EP(LP) CH1
IC1
(VIDEO & AUDIO SIGNAL PROCESSOR)

4.17 AUDIO BLOCK DIAGRAM



5
4
3
2
1
A
B
C
D
03 MAIN (VIDEO/AUDIO, TERMINAL)
TO TUNER
DEMOD (R)
DEMOD (L)
RF AUDIO
TU AUDIO
IC1
(VIDEO & AUDIO SIGNA
J7105
FRONT IN
A.IN (R)
A.IN (L)
8
7
6
5
4
3
ONLY USED FOR
HR-J670EK &
HR-J770EK/J770EU
R7105,R7107
C7101,C7102
FILTER
A.OUT(R)
A.IN(R)
A.OUT(L)
A.GND
A.IN(L)
①
②
③
④
⑥
FILTER
R7110,R7111
C7103,C7104
J7102
AV2(L-2) IN/DECODER
FILTER
R7119,R7120
C7111,C7112
J7101
AV1(L-1) IN/OUT
FILTER
R7114,R7116
C7109,C7110
J7103
REAR OUT
A.OUT (R)
A.OUT (L)
4
2
1
77
78
79
80
81
68
67
57
53
62
64
61
63
52
65
66
82
71
72
73
74
75
50
48
NOT USED
NOT USED
NOT USED
TU
FR
L1
L2
DEC(R)
DEC(L)
MIX
NA IN
LINE OUT(R)
LINE OUT(L)
NA REC
LOG(L)
LOG(R)
NA EXT IN
TU
FR
L1
L2
INPUT SELECT (R-CH)
MIX
EVR
RE
NA PB
R CH
R CH
L CH
L CH
OUTPUT SELECT
NORMAL INPUT SELECT
EVR
RE
INPUT SELECT (L-CH)
INPUT SELECT
HIFI
HIFI


O SIGNAL PROCESSOR)
A.MUTE(H)
A.FF
LOGIC
DATA
CLK
ENV DET
+
NOR DET
REC/PB
MON
NOISE
REDUCTION
(R-CH)
HIFI
FM
PRE/REC AMP
CH1
COMMON
CH2
NOISE
REDUCTION
(L-CH)
92
93
60
59
94
87
98
97
96
TP2253
A.PB.FM
Q2251
Q2252
SW
A. MUTE (H)
A. FF
I2C_DATA
I2C_CLK
A.ENV/ND (L)
H. REC_ST(H)
PAL_PB(H)
N. REC(H)
N. REC_ST(H)
TO
SYSCON
CN1
U.DRUM
AUDIO HEAD
9
10
11
12
FMA_CH1
FMA_CH2
POWER
SW
Q2052-Q2055
OSC
Q2051
TRANS
T2051
5
6
SP ON
DET
VCA
P
R
PRE AMP
REC ON
ER(LP) ON
115
116
117
118
119
R2013-R2015
C2006,C2007
FILTER
SW
Q2001-Q2003
CN2002
FULL ERASE HEAD
F. ERASE
1
2
1 2
A/C HEAD
CN2001
CN1
4
3
2
1
4
5
6
7
A. ERASE
REC/PB
REC
EQ
R2017,C2011
FILTER

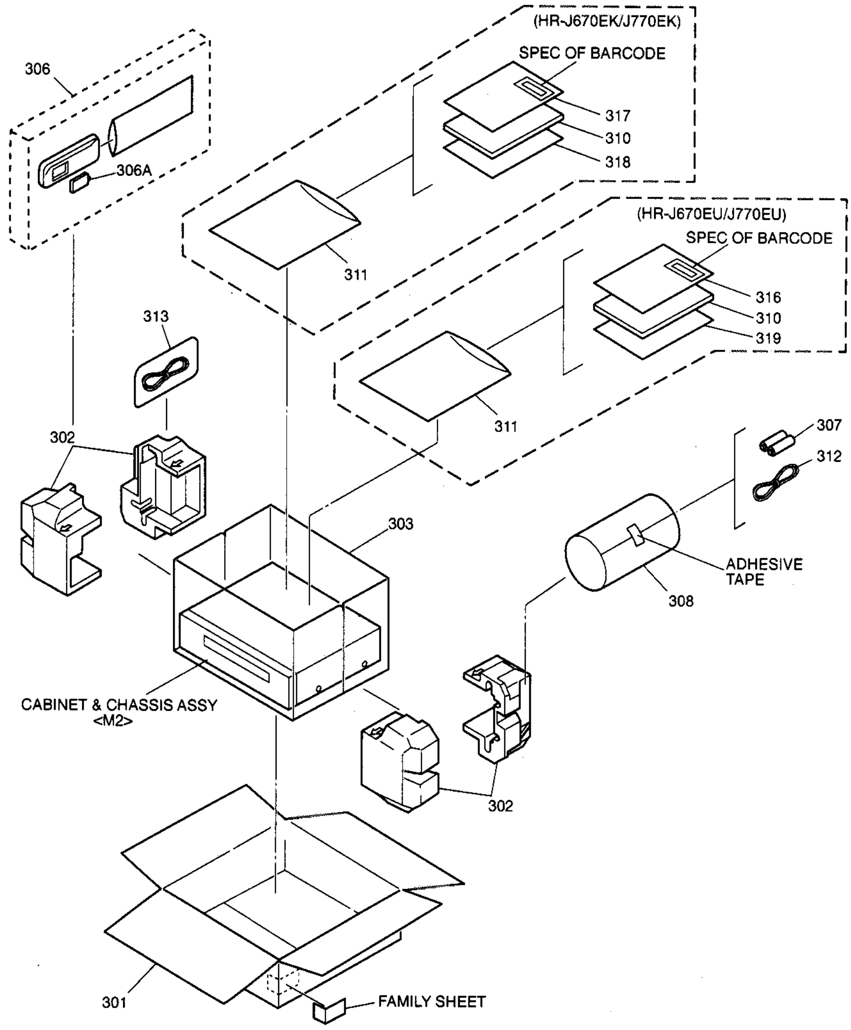
SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

The instruction manual to be provided with this product will differ according to the destination.



****

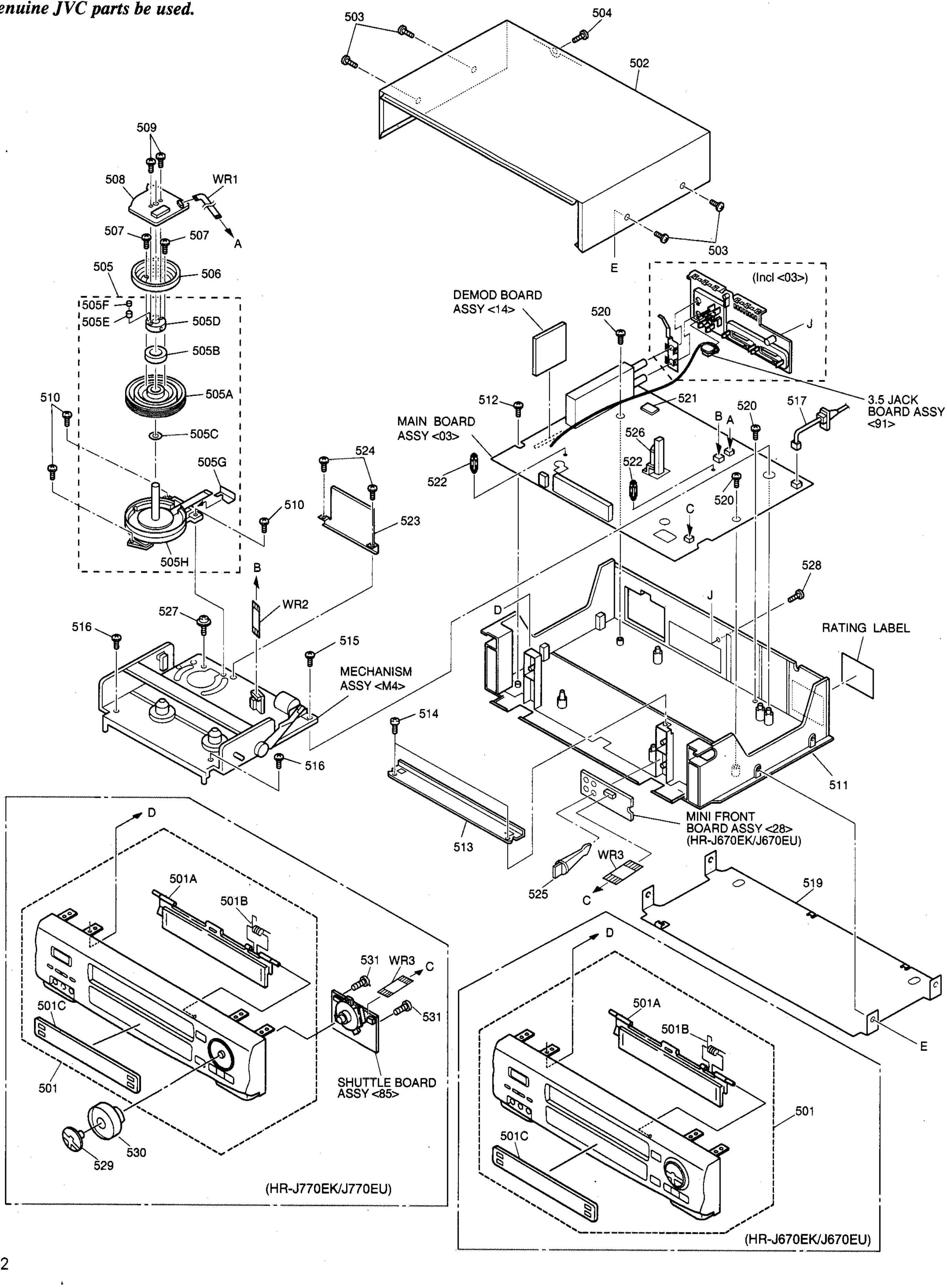
PACKING AND ACCESSORY ASSEMBLY <M1>

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	301	LP30665-001A	PACKING CASE
	302	LP30355-001D	CUSHION ASSY
	303	PQM30021-93	POLY BAG
	306	LP20878-002A	REMOTE CONTROLLER
	306A	LP40610-002A	COVER(BATTERY)
	307	-	BATTERY,X2("AA"TYPE)
	308	QPC02202230P	POLY BAG
⚠	310	LPT0314-001A	INST.BOOK(EN),J670EK
⚠		LPT0315-001B	INST.BOOK(EN),J770EK
⚠		LPT0322-001B	INST.BOOK(EN),J670EU
⚠		LPT0322-002B	INST.BOOK(GE),J670EU
⚠		LPT0322-003A	INST.BOOK(FR),J670EU
⚠		LPT0322-004A	INST.BOOK(DU),J670EU
⚠		LPT0322-005A	INST.BOOK(SP),J670EU
⚠		LPT0322-006A	INST.BOOK(IT),J670EU
⚠		LPT0322-007A	INST.BOOK(DA),J670EU
⚠		LPT0322-008A	INST.BOOK(FI),J670EU
⚠		LPT0322-009A	INST.BOOK(SW),J670EU
⚠		LPT0322-010A	INST.BOOK(NO),J670EU
⚠		LPT0322-011A	INST.BOOK(PT),J670EU
⚠		LPT0322-012A	INST.BOOK(GR),J670EU
⚠		LPT0322-013A	INST.BOOK(CZ),J670EU
⚠		LPT0322-014A	INST.BOOK(PO),J670EU
⚠		LPT0322-015A	INST.BOOK(HU),J670EU
⚠		LPT0323-001A	INST.BOOK(EN),J770EU
⚠		LPT0323-002A	INST.BOOK(GE),J770EU
⚠		LPT0323-003A	INST.BOOK(FR),J770EU
⚠		LPT0323-004A	INST.BOOK(DU),J770EU
⚠		LPT0323-005A	INST.BOOK(SP),J770EU
⚠		LPT0323-006A	INST.BOOK(IT),J770EU
⚠		LPT0323-007A	INST.BOOK(DA),J770EU
⚠		LPT0323-008A	INST.BOOK(FI),J770EU
⚠		LPT0323-009A	INST.BOOK(SW),J770EU
⚠		LPT0323-010A	INST.BOOK(NO),J770EU
⚠		LPT0323-011A	INST.BOOK(PT),J770EU
⚠		LPT0323-012A	INST.BOOK(GR),J770EU
⚠		LPT0323-013A	INST.BOOK(CZ),J770EU
⚠		LPT0323-014A	INST.BOOK(PO),J770EU
⚠		LPT0323-015A	INST.BOOK(HU),J770EU
	311	QPC02503530P	POLY BAG
	312	PEAC0300-02	RF CABLE
	313	QAL0095-005	SATELLITE CONTROLLER,J670EK/J770EK/J770EU
	316	BT-54013-1	WARRANTY CARD,J670EU/J770EU
	317	BT-54008-2	GUARANTY CARD,J670EK/J770EK
	318	LP20790-001A	QUESTIONAIRE CARD,J670EK/J770EK
	319	LP40618-001A	SHEET(SPAIN),J670EU/J770EU

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.


503
504
502
503
E
509
508
WR1
A
507
507
505
506
505F
505E
505D
505B
505A
510
505C
505G
505H
510
524
523
DEMOD BOARD ASSY <14>
520
(Incl <03>)
J
3.5 JACK BOARD ASSY <91>
512
521
520
517
MAIN BOARD ASSY <03>
B
A
526
522
522
520
C
528
B
WR2
527
516
515
MECHANISM ASSY <M4>
D
J
RATING LABEL
514
516
511
513
MINI FRONT BOARD ASSY <28> (HR-J670EK/J670EU)
WR3
525
C
519
D
501A
501B
531
WR3
C
531
501C
501
SHUTTLE BOARD ASSY <85>
530
529
(HR-J770EK/J770EU)
D
501A
501B
E
501
501C
(HR-J670EK/J670EU)

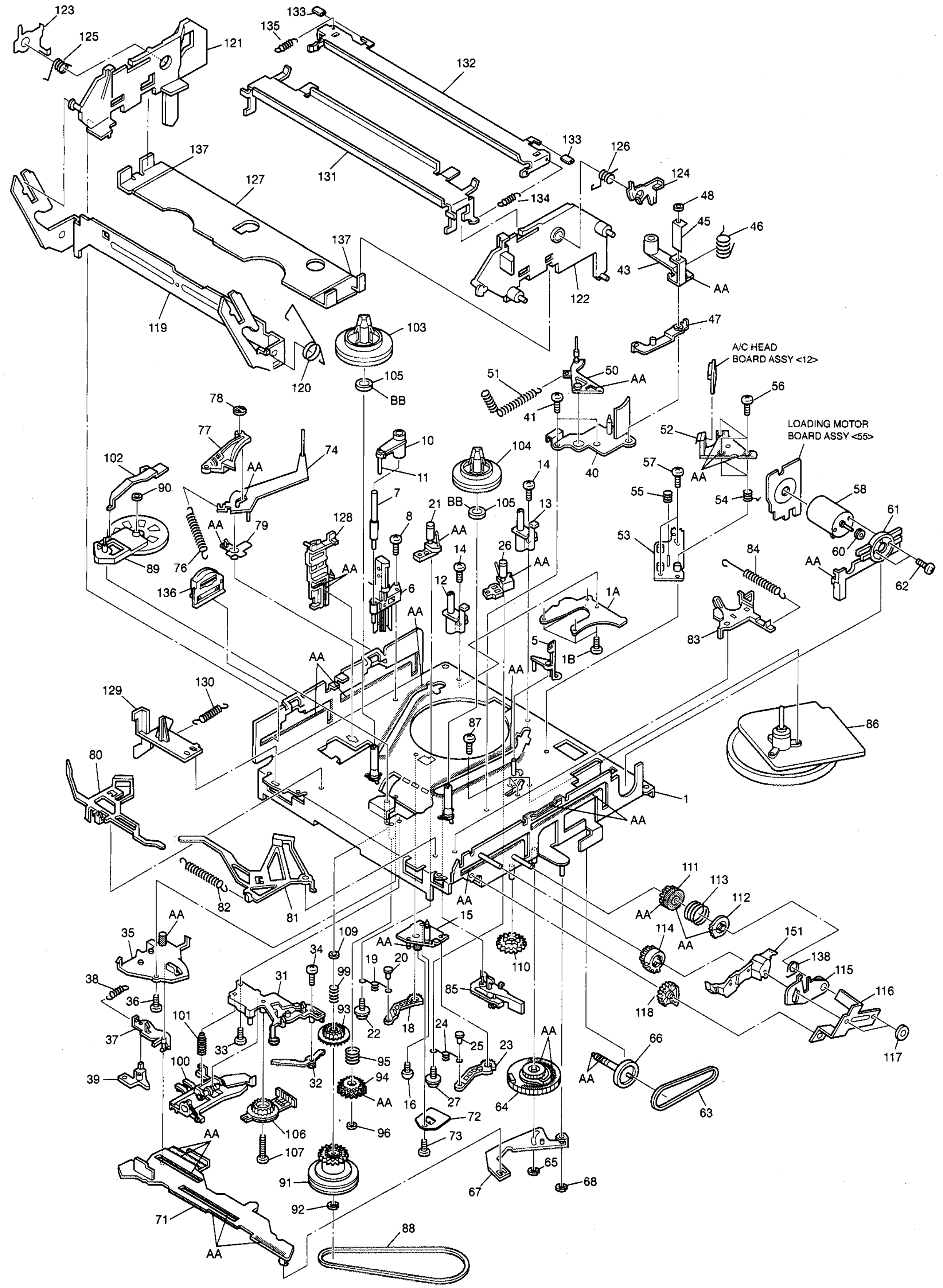
****

CABINET AND CHASSIS ASSEMBLY <M2>

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	⚠	501	LP10289-002B	FRONT PANEL ASSY,J770EK
	⚠		LP10289-003D	FRONT PANEL ASSY,J670EU
	⚠		LP10289-009B	FRONT PANEL ASSY,J670EK
	⚠		LP10289-010B	FRONT PANEL ASSY,J770EU
	⚠		LP10013-017C	TOP COVER
		501A	LP20868-002A	CASSETTE DOOR
		501B	PQ46448	TORSION SPRING
		501C	LP20869-002A	DISPLAY WINDOW,J770EK
			LP20869-003A	DISPLAY WINDOW,J670EU
			LP20869-009A	DISPLAY WINDOW,J670EK
			LP20869-010A	DISPLAY WINDOW,J770EU
	⚠	502	LP10013-017C	TOP COVER
		503	QYTDSF3010M	SCREW,X4 TOP COVER(SIDE)
		504	QYTDSF3010M	SCREW,TOP COVER(REAR)
		505	LP20617-002A	DRUM SUB ASSY
		505A	LP20616-002A	UPPER DRUM ASSY
		505B	PDM4439	CAP
		505C	PDM4444-19-2	WASHER
		505D	LP40572-001A	COLLAR ASSY
		505E	LP40323-001A	CONTACT
		505F	LP30004-014A	COMPRESSION SPRING
		505G	LP40174-001B	FPC PLATE
		505H	LP20615-002A	LOWER DRUM ASSY
		506	PDZ0179-1-4	ROTOR ASSY
		507	QYSPSP3006Z	SCREW,X2
	⚠	508	QAR0119-001	STATOR ASSY
		509	QYSPSPH2606Z	SCREW,X2
		510	QYTDST2610Z	SCREW,X3 DRUM
	⚠	511	LP10108-001D	BOTTOM CHASSIS
		512	QYTDSF3010Z	SCREW,MAIN
		513	LP30312-001B	BRACKET(CHASSIS
		514	QYTDSF3010Z	SCREW,X2
		515	QYTDSF4012Z	SCREW,MECHA
		516	QYTDSF3010Z	SCREW,X2 MECHA
	⚠	517	QMP4A10-170J5	POWER CORD,J670EU/J770EU
	⚠		QMP51K0-170-K	POWER CORD,J670EK/J770EK
	⚠	519	LP10014-002B	BOTTOM COVER
		520	DPSF3010Z	SCREW,X3 MAIN
		521	LP30002-042A	SPACER,MAIN BOARD
		522	LP40226-001A	PC SUPPORT,X2
		523	LP30356-002C	DRUM SHIELD
		524	QYTDST2606Z	SCREW,X2 DRUM SHIELD
		525	LP40628-001A	PC SUPPORT,J670EK/J670EU
		526	LP40253-001B	STOPPER
		527	PQ40413	SPECIAL SCREW,MECHA
		528	QYTDSF3010M	SCREW,TERMINAL
		529	LP30651-002A	KNOB(JOG),J770EK/J770EU
		530	LP30652-002A	KNOB(SHUTTLE),J770EK/J770EU
		531	QYTDSF2608Z	SCREW,X2 JOG,J770EK/J770EU
		WR1	QUQ212-0518CG	FFC WIRE,DRUM CN3001
		WR2	WJT0005-002A	E-CARD WIRE,A/C HEAD CN2001
		WR3	QUQ112-0914CG	FFC WIRE,FRONT CN7003

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

5.3 MECHANISM ASSEMBLY <M4>


123
133
125
135
121
132
137
127
131
133
126
134
124
48
45
46
137
43
AA
122
119
103
47
120
105
BB
51
50
AA
A/C HEAD BOARD ASSY <12>
56
78
41
10
LOADING MOTOR BOARD ASSY <55>
77
74
104
52
102
AA
11
14
40
57
AA
90
7
21
BB
105
13
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54
58
61
128
8
AA
79
AA
26
60
53
84
AA
89
76
14
AA
62
136
6
12
1A
AA
5
1B
83
AA
AA
129
130
87
86
80
1
AA
111
113
112
82
81
AA
15
114
AA
151
35
AA
109
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99
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110
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118
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AA
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117
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100
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AA
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AA
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AA
106
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107
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AA

Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

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MECHANISM ASSEMBLY <M4>

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		1	LP20228-008H	MAIN DECK ASSY
		1A	LP40275-003A	PLATE(SUPPLY)
		1B	QYTDST2606Z	SCREW,X4 PLATE(SUPPLY)
		5	LP30492-002B	GUIDE POLE GUARD
		6	NAH0001-001	FULL ERASE HEAD
		7	LP40098-001B	GUIDE POLE(SUPPLY)
		8	QYTDST2608Z	SCREW,FE HEAD
		10	LP30459-002A	TENSION STUD BASE
		11	LP40367-002A	TENSION STUD
		12	LP30409-002C	UV CATCHER 2(SUPPLY)
		13	LP30409-002C	UV CATCHER 2(TAKE UP)
		14	QYTPST2606Z	SCREW,X2 UV CATCHER
		15	LP30223-003C	LOADING ARM GEAR SHAFT
		16	QYTDST2606Z	SCREW
		18	LP30224-001A	LOADING ARM GEAR(SPPLY)
		19	LP40099-001A	TORSION ARM
		20	LP40100-001A	PIN
		21	LP40101-002C	POLE BASE ASSY(SUPPLY)
		22	QYSPSTG2606Z	SCREW
		23	LP40103-002B	LOADING ARM GEAR(TAKE UP)
		24	LP40099-001A	TORSION ARM
		25	LP40100-001A	PIN
		26	LP40104-003A	POLE BASE ASSY(TAKE UP)
		27	QYSPSTG2606Z	SCREW
		31	LP20233-004B	ROTARY ENCODER GUIDE
		32	LP30499-001C	BRAKE LEVER
		33	QYTPST2606Z	SCREW
		34	QYTPST2608Z	SCREW
		35	LP30226-004C	CONTROL PLATE GUIDE
		36	QYTPST2605Z	SCREW
		37	LP30249-003B	TAKE UP LEVER
		38	LP30003-006A	TENSION SPRING
		39	LP40119-002A	T.UP HEAD
		40	LP20234-004B	LID GUIDE
		41	QYTDST2606Z	SCREW,X2
		43	LP40105-001B	PINCH ROLLER ARM ASSY
		45	LP40478-001A	PINCH ROLLER SHEET2
		46	LP40148-002A	TORSION SPRING
		47	LP40149-001C	PRESS LEVER ASSY
		48	LP30016-002A	SLIT WASHER
		50	LP40106-002E	GUIDE ARM ASSY
		51	LP40134-001C	TENSION SPRING
		52	QAH0010-004	AC HEAD
		53	LP30228-001A	HEAD BASE
		54	LP30004-013A	COMPRESSION SPRING,X3
		55	LP40236-001A	COMPRESSION SPRING
		56	LP40213-002B	SPECIAL SCREW,X3
		57	QYTDST2608Z	SCREW,X2
		58	QAR0023-001	LOADING MOTOR
		60	PQ43546-1-2	MOTOR PULLEY
		61	LP30230-003A	MOTOR GUIDE
		62	QYTPSP3003Z	SCREW,X2
		63	LP30005-003A	BELT,LOADING MOTOR
		64	LP20791-002B	CTL.CAM
		65	PQM30017-24	SLIT WASHER
		66	LP40120-001A	WORM GEAR
		67	LP40107-002A	LINK LEVER ASSY
		68	PQM30017-24	SLIT WASHER
		71	LP10201-003C	CONTROL PLATE
		72	LP40379-001B	CONTROL BRACKET(1)
		73	QYTDSF2608M	SCREW
		74	LP40108-002A	TENSION ARM ASSY
		76	LP30003-010A	TENSION SPRING
		77	LP40109-003D	TENSION BRAKE ASSY
		78	PQ46302-1-3	ADJUST PIN
		79	LP30232-002A	T.ARM BEARING
		80	LP40532-008A	MAIN BRAKE ASSY (SUPPLY)
		81	LP40111-011A	MAIN BRAKE ASSY (TAKE-UP)
		82	LP30003-026A	TENSION SPRING
		83	LP40112-001F	SUB BRAKE ASSY(TAKE UP)
		84	LP40357-002A	TENSION SPRING
		85	LP40461-001A	CAPSTAN BRAKE ASSY
		86	QAR0087-004	CAPSTAN MOTOR
		87	QYTDSF2606M	SCREW,X3
		88	LP30005-007A	BELT,CAPSTAN MOTOR
		89	LP40114-008A	IDLER ARM ASSY
		90	LP30016-001A	SLIT WASHER
		91	LP40593-001A	CLUTCH UNIT 3
		92	PQM30017-47	SLIT WASHER
		93	LP40446-002B	CLUTCH GEAR 1
		94	LP40442-001A	DIRECT GEAR
		95	LP40483-002A	COMPRESSION SPRING
		96	LP30016-001A	SLIT WASHER
		99	LP40554-001A	COMPRESSION SPRING
		100	LP40484-001H	CHANGE LEVER ASSY
		101	LP40512-002B	COMRESSION SPRING
		102	LP30236-002B	IDLER LEVER
		103	LP40420-001A	REEL DISK (SUPPLY)
		104	LP40421-001A	REEL DISK (TAKE-UP)
		105	LP30017-015A	SPACER,X2
		106	QSW0554-003	ROTARY ENCODER
		107	QYTPST2620Z	SCREW,ROTARY ENCODER
		109	LP30017-019A	SPACER,C.GEAR 1
		110	LP30237-002B	CASSETTE GEAR
		111	LP30239-002G	LIMIT GEAR(1)
		112	LP30240-002G	LIMIT GEAR(2)
		113	LP40136-001E	TORSION SPRING
		114	LP30242-002A	RELAY GEAR
		115	LP30339-002E	OPENER GUIDE
		116	LP40214-001B	C.H.BRACKET
		117	PQM30017-47	SLIT WASHER,X2
		118	LP30243-001D	DRIVE GEAR
		119	LP20240-001D	DRIVE ARM
		120	LP40137-001A	TORSION SPRING
		121	LP10081-002L	SIDE HOLDER(L)
		122	LP10082-002M	SIDE HOLDER(R)
		123	LP30255-006A	LOCK LEVER(L)
		124	LP30256-001H	LOCK LEVER(R)
		125	LP40168-001A	TORSION SPRING(L)
		126	LP40218-001B	TORSION SPRING(R)
		127	LP30257-001F	CASSETTE HOLDER
		128	LP30244-002G	GUIDE RAIL
		129	LP30245-002E	REC SAFETY LEVER
		130	LP30003-004A	TENSION SPRING
		131	LP20578-001C	TOP GUIDE
		132	LP30500-001C	HOLD PLATE
		133	LP40450-003A	PAD,X2 HOLD PLATE
		134	LP30003-025B	TENSION SPRING
		135	LP30003-024A	TENSION SPRING
		136	LP40481-003A	ROLLER CAM ASSY
		137	LP30019-014A	PAD,X2 CASSETTE HOLDER
		138	LP40545-001A	TORSION SPRING,OPENER GUIDE
		151	LP20324-003A	DOOR OPENER

5.4 ELECTRICAL PARTS LIST

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MAIN BOARD ASSEMBLY <03>

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PW1	LPA10086-01E1	MAIN BOARD ASSY,J770EK
	LPA10086-02E1	MAIN BOARD ASSY,J670EU
	LPA10086-03E1	MAIN BOARD ASSY,J670EK
	LPA10086-04E1	MAIN BOARD ASSY,J770EU
IC1	JCP8020-MSB	IC
IC201	LC74775-9750	IC
IC3001	HD6432194A24F	IC,J670EU/J770EU
	HD6432194A78F	IC,J670EK/J770EK
IC3002	S-80727AN-DQ-X	IC
	or S-80827ANUP-W	IC
IC3003	AT24C16-10PC	IC
	or 24LC16B/P	IC
IC3004	BA6956AN	IC
IC5301	LA5613	IC
IC6080	BA15218F-XE	IC
IC7001	M35500BGP	IC
	or M35500AGP	IC
IC7002	GP1U291Q	IR DETECT UNIT
	or PNA4652M00YC	IR DETECT UNIT
IC7101	BH7635S	IC
Q1	2SC4081/S/-X	TRANSISTOR
Q2	2SC4081/S/-X	TRANSISTOR
Q3	2SC4081/S/-X	TRANSISTOR
Q4	2SC4081/S/-X	TRANSISTOR
Q22	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
Q38	2SC4081/QRS/-X	TRANSISTOR
Q41	DTC144WU	TRANSISTOR,J670EU/J770EU
	or PDTC144WU	TRANSISTOR,J670EU/J770EU
	or RN1309	TRANSISTOR,J670EU/J770EU
	or UN521E	TRANSISTOR,J670EU/J770EU
Q201	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q2001	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
Q2002	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2003	DTA144WU	TRANSISTOR
	or PDTA144WU	TRANSISTOR
	or RN2309	TRANSISTOR
	or UN511E	TRANSISTOR
Q2051	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
Q2052	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q2053	DTC144WU	TRANSISTOR
	or PDTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2054	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q2055	DTC144WU	TRANSISTOR
	or PDTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2251	DTA144WU	TRANSISTOR
	or PDTA144WU	TRANSISTOR
	or RN2309	TRANSISTOR
	or UN511E	TRANSISTOR
Q2252	DTC114EU	TRANSISTOR
	or PDTC114EU	TRANSISTOR
	or RN1302	TRANSISTOR
	or UN5211	TRANSISTOR
Q3001	2SD1819A/QRS/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q3002	PTZ-NV16	PHOTO TRANSISTOR
	or PTZ-NV16A	PHOTO TRANSISTOR
Q3003	PTZ-NV16	PHOTO TRANSISTOR
	or PTZ-NV16A	PHOTO TRANSISTOR
Q3004	2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
Q3005	2SD1819A/QRS/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q3007	UN521E	TRANSISTOR
	or RN1309	TRANSISTOR
	or DTC144WU	TRANSISTOR
	or PDTC144WU	TRANSISTOR
Q4001	UN5211	TRANSISTOR
	or RN1302	TRANSISTOR
	or DTC114EU	TRANSISTOR
	or PDTC114EU	TRANSISTOR
Q5101	2SK2632-CB14	POWER MOS FET
	or 2SK2632	POWER MOS FET
	or 2SK2129	POWER MOS FET
	or 2SK2129-LT	POWER MOS FET
Q5102	2SD2144S/UV/-T	TRANSISTOR
Q5303	2SD2144S/UV/-T	TRANSISTOR
Q5304	2SD1450/ST/-T	TRANSISTOR
	or 2SD1302/ST/-T	TRANSISTOR
Q5305	DTA114EU	TRANSISTOR
	or PDTA114EU	TRANSISTOR
	or RN2302	TRANSISTOR
	or UN5111	TRANSISTOR
Q5306	2SB1239	TRANSISTOR
Q5310	DTC114EU	TRANSISTOR
	or PDTC114EU	TRANSISTOR
	or RN1302	TRANSISTOR
	or UN5211	TRANSISTOR
Q5311	2SA1576A/RS/-X	TRANSISTOR
Q5312	2SD2144S/UV/-T	TRANSISTOR
Q5318	DTA114EU	TRANSISTOR
	or PDTA114EU	TRANSISTOR
	or RN2302	TRANSISTOR
	or UN5111	TRANSISTOR
Q6030	2SB1218A/RS/-X	TRANSISTOR
Q6031	DTC114EU	TRANSISTOR
	or PDTC114EU	TRANSISTOR
	or RN1302	TRANSISTOR

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
	or UN5211	TRANSISTOR	
Q6032	DTC114EU	TRANSISTOR	
	or PDTC114EU	TRANSISTOR	
	or UN5211	TRANSISTOR	
	or RN1302	TRANSISTOR	
Q7106	2SB1218A/QRS/-X	TRANSISTOR	
	or 2SA1576A/QRS/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q7201	2SC1317/RS/-T	TRANSISTOR	
D6	MTZJ5.6C	ZENER DIODE	
	or RD5.6ES/B3/-T2	ZENER DIODE	
D201	QRE141J-101Y	RESISTOR	100Ω,1/4W
D202	QRE141J-101Y	RESISTOR	100Ω,1/4W
D203	QRE141J-101Y	RESISTOR	100Ω,1/4W
D2101	MTZJ8.2C	ZENER DIODE	
D2201	11ES2	DIODE	
D3001	LNB2301L01VI	LE DIODE	
D3002	1SS133	DIODE	
D3003	RD39ES/B3/-T2	ZENER DIODE	
	or MTZJ39C	ZENER DIODE	
D3004	11ES2	DIODE	
D3005	11ES2	DIODE	
D3008	1SS133	DIODE	
D4001	1SS133	DIODE	
D4002	1SS133	DIODE	
D5001	S1WB(A)60F4102	BRIDGE DIODE	
	or S1WB(A)60F4072X	BRIDGE DIODE	
	or S1WB(A)60F4062X	BRIDGE DIODE	
D5101	AU01	FR DIODE	
	or ERA18-04-T2	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
	or 10ELS4	FR DIODE	
	or PG104RS	FR DIODE	
D5102	AU01	FR DIODE	
	or PG104RS	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
	or 10ELS4	FR DIODE	
	or ERA18-04-T2	FR DIODE	
D5103	1SS133	DIODE	
	or 1SS270A	DIODE	
D5105	1SS133	DIODE	
	or 1SS270A	DIODE	
D5201	AU01Z	FR DIODE	
	or 10ELS2	FR DIODE	
D5203	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or PG104RS	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D5204	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
	or 10ELS2	FR DIODE	
	or PG104RS	FR DIODE	
D5210	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or PG104RS	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D5211	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
	or PG104RS	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D5212	RK14LF-B2	BARRIER DIODE	
	or SB240-F26	SB DIODE	
	or 21DQ04	BARRIER DIODE	
D5301	MTZJ15A	ZENER DIODE	
	or RD15ES/B1/-T2	ZENER DIODE	
D5302	MTZJ6.8A	ZENER DIODE	
	or RD6.8ES/B1/-T2	ZENER DIODE	
D5303	MTZJ27C	ZENER DIODE	
	or RD27ES/B3/-T2	ZENER DIODE	
D5304	1SS133	DIODE	
	or 1SS270A	DIODE	
D5306	MTZJ11C	ZENER DIODE	
	or RD11ES/B3/-T2	ZENER DIODE	
D5307	1SS133	DIODE	
	or 1SS270A	DIODE	
D5308	1SS133	DIODE	
	or 1SS270A	DIODE	
D5309	1SS133	DIODE	
	or 1SS270A	DIODE	
D5310	MTZJ11C	ZENER DIODE	
	or RD11ES/B3/-T2	ZENER DIODE	
D5320	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
D6002	HZ30-2L-T2	ZENER DIODE	
	or HZ30-2LTD	Z DIODE (M)	
D7002	RD9.1ES/B2/-T2	ZENER DIODE	
	or UZ9.1BSB	ZENER DIODE	
	or MTZJ9.1B	ZENER DIODE	
D7004	1SS133	DIODE	
D7009	SLR-325VC-T	LE DIODE	
D7101	1SS133	DIODE	
D7102	1SS133	DIODE	
D7105	MTZJ12C	ZENER DIODE	
	or RD12ES/B3/-T2	ZENER DIODE	
D7106	MTZJ12C	ZENER DIODE	
	or RD12ES/B3/-T2	ZENER DIODE	
R1	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R3	NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
R5	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R6	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R7	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R9	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R12	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R21	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R22	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R46	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
R50	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R77	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R90	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
R92	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R93	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R104	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R202	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R209	NRSA02J-512X	MG RESISTOR	5.1kΩ,1/10W
R210	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
R211	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
R213	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R216	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R224	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R225	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2001	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R2002	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
R2003	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2004	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
R2005	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2006	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R2007	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R2008	QRE141J-123Y	RESISTOR	12kΩ,1/4W
R2009	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2010	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2012	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R2013	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2014	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
R2015	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
R2016	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R2017	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2018	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2019	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2053	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2054	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2055	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
R2056	NRSA02J-820X	MG RESISTOR	82Ω,1/10W
R2057	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2058	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2059	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2060	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2201	QRE141J-151Y	RESISTOR	150Ω,1/4W
R2206	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2207	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
R2208	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2209	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2210	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2211	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2213	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R2215	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R2217	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2218	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R2219	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R2220	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R2222	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2223	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2224	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2225	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R2226	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2227	QRE141J-123Y	RESISTOR	12kΩ,1/4W
R2228	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R2229	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
R2251	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3013	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3014	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3015	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3017	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3019	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R3020	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3021	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3022	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3029	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R3030	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3031	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R3032	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3034	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3035	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3036	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3037	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3038	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3039	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3041	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3044	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3046	NRSA02J-0R0X	MG RESISTOR,J770EK/J770EU	0Ω,1/10W
R3047	NRSA02J-0R0X	MG RESISTOR,J770EK/J770EU	0Ω,1/10W
R3049	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R3050	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R3051	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3052	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3053	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R3054	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3055	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3056	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3057	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3058	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3060	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3061	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3062	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3066	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3069	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R3071	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3072	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3073	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3074	QRE141J-102Y	RESISTOR,J670EU/J770EU	1kΩ,1/4W
R3075	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R3076	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R3078	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3079	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3085	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3086	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R3087	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3104	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R3201	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3202	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3203	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3204	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R3205	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
R3206	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R3207	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R3208	QRE141J-181Y	RESISTOR	180Ω,1/4W
R3209	QRE141J-273Y	RESISTOR	27kΩ,1/4W
R3210	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
R3211	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R3212	QRE141J-474Y	RESISTOR	470kΩ,1/4W
R3213	NRSA02J-334X	MG RESISTOR	330kΩ,1/10W
R3214	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3215	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3216	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3217	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
R3218	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R3219	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R3220	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
R3222	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R3223	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R3224	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R3225	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3229	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
		R3230	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3231	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3232	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3234	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3235	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R3236	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R3244	NRSA02J-333X	MG RESISTOR,J770EK/J770EU	33kΩ,1/10W
		R3245	NRSA02J-333X	MG RESISTOR,J770EK/J770EU	33kΩ,1/10W
		R4001	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
		R4003	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R4004	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R4005	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R4007	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R4008	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R4009	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4010	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4011	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R4012	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R4013	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4015	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R4016	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4017	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4018	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4019	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4020	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4021	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R5101	QRE141J-334Y	RESISTOR	330kΩ,1/4W
		R5102	QRE141J-334Y	RESISTOR	330kΩ,1/4W
		R5103	QRE141J-683Y	RESISTOR	68kΩ,1/4W
		R5104	QRG02GJ-683	OMF RESISTOR	68kΩ,2W
		R5106	QRT01DJ-R39X	MF RESISTOR	0.39Ω,1W
		R5107	QRE121J-331Y	RESISTOR	330Ω,1/2W
		R5108	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R5109	QRE141J-681Y	RESISTOR	680Ω,1/4W
		R5110	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R5111	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R5112	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R5302	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R5303	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
	⚠	R5304	QRZ9005-221X	FUSI RESISTOR	220Ω,1/4W
		R5305	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R5306	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R5307	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R5310	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R5311	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R5313	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
		R5314	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R5317	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R5318	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R5319	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R5321	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R5322	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R5323	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R5327	NRSA02J-303X	MG RESISTOR	30kΩ,1/10W
		R6030	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6031	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
		R6032	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R6033	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R6050	QRE141J-101Y	RESISTOR	100Ω,1/4W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R6051	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R6052	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7001	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7002	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7003	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7004	QRE141J-471Y	RESISTOR	470Ω,1/4W
		R7005	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7006	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7007	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7008	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7013	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7017	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7020	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7021	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R7022	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R7023	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R7024	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
		R7025	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R7030	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7031	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R7032	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R7033	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R7034	NRSA02J-0R0X	MG RESISTOR,J670EU/J670EK	0Ω,1/10W
			NRSA02J-272X	MG RESISTOR,J770EK/J770EU	2.7kΩ,1/10W
		R7035	NRSA02J-472X	MG RESISTOR,J770EK/J770EU	4.7kΩ,1/10W
		R7036	NRSA02J-682X	MG RESISTOR,J770EK/J770EU	6.8kΩ,1/10W
		R7037	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
		R7040	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R7103	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R7105	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R7107	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R7108	QRE141J-750Y	RESISTOR	75Ω,1/4W
		R7110	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R7111	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R7112	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R7113	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R7114	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7116	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7117	QRE141J-750Y	RESISTOR	75Ω,1/4W
		R7119	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7120	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7122	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R7124	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R7131	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R7133	QRE141J-471Y	RESISTOR	470Ω,1/4W
		R7134	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7135	QRE141J-221Y	RESISTOR	220Ω,1/4W
		R7160	NRSA02J-331X	MG RESISTOR,J670EK/J770EU	330Ω,1/10W
		R7161	NRSA02J-101X	MG RESISTOR,J670EK/J770EU	100Ω,1/10W
		R7162	NRSA02J-331X	MG RESISTOR,J670EK/J770EU	330Ω,1/10W
		R7163	NRSA02J-750X	MG RESISTOR,J670EU/J770EU	75Ω,1/10W
		R7167	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R7171	QRE141J-0R0	RESISTOR	0Ω,1/4W
		R7202	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R7203	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R7204	QRE123J-100X	RESISTOR	10Ω,1/2W
		C1	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C2	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C4	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C5	QEKJ0JM-227	E CAPACITOR	220μF,6.3V

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C6	NCB21EK-104X	CAPACITOR	0.1µF,25V
C8	NCB21HK-473X	CAPACITOR	0.047µF,50V
C10	NDC21HJ-151X	CAPACITOR	150pF,50V
C11	NCB21EK-104X	CAPACITOR	0.1µF,25V
C12	NDC21HJ-470X	CAPACITOR	47pF,50V
C14	NCB21EK-104X	CAPACITOR	0.1µF,25V
C15	NCB21HK-103X	CAPACITOR	0.01µF,50V
C16	NCB21EK-104X	CAPACITOR	0.1µF,25V
C17	QEKJ1HM-335	E CAPACITOR	3.3µF,50V
C19	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
C20	QEQF1HM-105	NP E CAPACITOR	1µF,50V
C21	NCB21EK-104X	CAPACITOR	0.1µF,25V
C22	QEKJ0JM-107	E CAPACITOR	100µF,6.3V
C23	NCB21EK-104X	CAPACITOR	0.1µF,25V
C24	NCB21EK-104X	CAPACITOR	0.1µF,25V
C25	NDC21HJ-6R0X	CAPACITOR	6pF,50V
C27	NCB21HK-223X	CAPACITOR	0.022µF,50V
C28	QEKJ1HM-335	E CAPACITOR	3.3µF,50V
C29	NCB21EK-333X	CAPACITOR	0.033µF,25V
C30	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
C31	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
C32	NCB21EK-104X	CAPACITOR	0.1µF,25V
C33	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
C34	NCB21EK-224X	CAPACITOR	0.22µF,25V
C35	QDYB1CM-103Y	CAPACITOR	0.01µF,16V
C36	QERF1EM-475	E CAPACITOR	4.7µF,25V
C37	QEKJ1HM-105	E CAPACITOR	1µF,50V
C38	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
C39	NCB21EK-104X	CAPACITOR	0.1µF,25V
C40	QEKJ1CM-106	E CAPACITOR	10µF,16V
C43	NCB21HK-332X	CAPACITOR	0.0033µF,50V
C51	QEKJ1HM-105	E CAPACITOR,J670EK/J770EU	1µF,50V
C53	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
C62	NCB21EK-104X	CAPACITOR	0.1µF,25V
C64	NDC21HJ-220X	CAPACITOR	22pF,50V
C65	QEKJ1HM-105	E CAPACITOR	1µF,50V
C69	NCB21HK-103X	CAPACITOR	0.01µF,50V
C70	NCB21HK-103X	CAPACITOR	0.01µF,50V
C81	NCB21HK-103X	CAPACITOR	0.01µF,50V
C92	NDC21HJ-330X	CAPACITOR	33pF,50V
C94	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
C97	NCB21EK-104X	CAPACITOR	0.1µF,25V
C99	NCB21EK-104X	CAPACITOR	0.1µF,25V
C106	NCB21HK-821X	CAPACITOR	820pF,50V
C108	NDC21HJ-680X	CAPACITOR	68pF,50V
C109	NCB21CK-224X	CAPACITOR	0.22µF,16V
C110	NDC21HJ-820X	CAPACITOR	82pF,50V
C114	NDC21HJ-181X	CAPACITOR,J670EU/J770EU	180pF,50V
C204	NDC21HJ-100X	CAPACITOR	10pF,50V
C206	NDC21HJ-330X	CAPACITOR	33pF,50V
C207	NDC21HJ-330X	CAPACITOR	33pF,50V
C209	NCB21CK-474X	CAPACITOR	0.47µF,16V
C212	NCB21EK-104X	CAPACITOR	0.1µF,25V
C213	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
C214	NCB21CK-224X	CAPACITOR	0.22µF,16V
C215	NCB21CK-224X	CAPACITOR	0.22µF,16V
C216	QERF0JM-107	E CAPACITOR	100µF,6.3V
C217	NDC21HJ-560X	CAPACITOR	56pF,50V
C218	NCB21AK-105X	CAPACITOR	1µF,10V
C222	QERF1HM-105	E CAPACITOR	1µF,50V
C225	QERF0JM-107	E CAPACITOR	100µF,6.3V

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C226	QERF0JM-107	E CAPACITOR	100µF,6.3V
C2001	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
C2002	QEKJ1CM-106	E CAPACITOR	10µF,16V
C2003	QEKJ1CM-476	E CAPACITOR	47µF,16V
C2005	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
C2006	NCB21HK-123X	CAPACITOR	0.012µF,50V
C2007	QEKJ1CM-226	E CAPACITOR	22µF,16V
C2008	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
C2009	NCB21HK-102X	CAPACITOR	0.001µF,50V
C2010	NCB21HK-152X	CAPACITOR	0.0015µF,50V
C2011	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
C2012	QEKC1EM-475	E CAPACITOR	4.7µF,25V
C2013	NCB21HK-331X	CAPACITOR	330pF,50V
C2051	NCB21HK-331X	CAPACITOR	330pF,50V
C2052	QFLC1HJ-823Z	F CAPACITOR	0.082µF,50V
C2053	NCB21HK-472X	CAPACITOR	0.0047µF,50V
C2054	NCB21HK-223X	CAPACITOR	0.022µF,50V
C2055	QEKJ1CM-106	E CAPACITOR	10µF,16V
C2201	NCB21CK-104X	CAPACITOR	0.1µF,16V
C2202	NCB21EK-333X	CAPACITOR	0.033µF,25V
C2203	QEKJ1CM-106	E CAPACITOR	10µF,16V
C2204	NCB21HK-102X	CAPACITOR	0.001µF,50V
C2205	QEKJ1HM-105	E CAPACITOR	1µF,50V
C2206	QEKJ1CM-106	E CAPACITOR	10µF,16V
C2207	QEKJ1CM-476	E CAPACITOR	47µF,16V
C2208	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
C2213	QEKJ1CM-106	E CAPACITOR	10µF,16V
C2214	QEKJ1CM-106	E CAPACITOR	10µF,16V
C2215	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
C2216	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
C2217	QEKJ1CM-106	E CAPACITOR	10µF,16V
C2218	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
C2219	QEKJ1CM-106	E CAPACITOR	10µF,16V
C2220	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
C2221	NCB21HK-103X	CAPACITOR	0.01µF,50V
C2222	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
C2223	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
C2224	NCB21HK-103X	CAPACITOR	0.01µF,50V
C2225	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
C2226	QEKJ1CM-106	E CAPACITOR	10µF,16V
C2227	NCB21CK-104X	CAPACITOR	0.1µF,16V
C2228	NCB21CK-104X	CAPACITOR	0.1µF,16V
C2229	NCB21HK-331X	CAPACITOR	330pF,50V
C2230	NCB21HK-331X	CAPACITOR	330pF,50V
C2251	QEKC1CM-476	E CAPACITOR	47µF,16V
C2252	QCBB1HK-103	CAPACITOR	0.01µF,50V
C2253	NCB21CK-104X	CAPACITOR	0.1µF,16V
C2254	NCB21CK-104X	CAPACITOR	0.1µF,16V
C2255	NDC21HJ-181X	CAPACITOR	180pF,50V
C3001	NCB21EK-104X	CAPACITOR	0.1µF,25V
C3002	NCB21HK-103X	CAPACITOR	0.01µF,50V
C3003	QEKJ1HM-106	E CAPACITOR	10µF,50V
C3004	NCB21CK-473X	CAPACITOR	0.047µF,16V
C3011	QETL0JM-338	E CAPACITOR	3300µF,6.3V
C3012	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
C3013	NCB21HK-103X	CAPACITOR	0.01µF,50V
C3014	QERF0JM-476	E CAPACITOR	47µF,6.3V
C3016	NCB21CK-473X	CAPACITOR	0.047µF,16V
C3022	NCB21CK-473X	CAPACITOR	0.047µF,16V
C3024	NDC21HJ-120X	CAPACITOR	12pF,50V
C3025	QAT7001-300Z	T.CAPACITOR,J670EU/J770EU,TIMER CLOCK	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C3026	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3027	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C3030	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C3031	NCB21CK-473X	CAPACITOR	0.047μF,16V
		C3032	NCB21CK-473X	CAPACITOR	0.047μF,16V
		C3033	NCB21CK-473X	CAPACITOR	0.047μF,16V
		C3036	NDC21HJ-180X	CAPACITOR	18pF,50V
		C3037	NDC21HJ-120X	CAPACITOR	12pF,50V
		C3040	NCB21CK-473X	CAPACITOR	0.047μF,16V
		C3041	NDC21HJ-100X	CAPACITOR,J670EK/J770EK	10pF,50V
		C3045	NDC21HJ-101X	CAPACITOR	100pF,50V
		C4001	QERF0JM-476	E CAPACITOR	47μF,6.3V
		C4002	QDYB1CM-103Y	CAPACITOR	0.01μF,16V
		C4003	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C4004	QERF1CM-226	E CAPACITOR	22μF,16V
		C4005	NCB21HK-222X	CAPACITOR	0.0022μF,50V
		C4006	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C4008	QEQF1HM-105	NP E CAPACITOR	1μF,50V
		C4009	NCB21HK-563X	CAPACITOR	0.056μF,50V
		C4010	NCB21EK-223X	CAPACITOR	0.022μF,25V
		C4011	NCB21CK-104X	CAPACITOR	0.1μF,16V
		C4012	QEKJ1HM-224	E CAPACITOR	0.22μF,50V
		C4013	NCB21HK-563X	CAPACITOR	0.056μF,50V
		C4014	NDC21HJ-101X	CAPACITOR	100pF,50V
		C4015	NCB21HJ-102X	CAPACITOR	0.001μF,50V
		C4016	NDC21HJ-101X	CAPACITOR	100pF,50V
	⚠	C5001	QFZ9073-683	F CAPACITOR	0.068μF,250V
	⚠	C5002	QFZ9051-333	F CAPACITOR	0.033μF,250V
	⚠	C5005	QCZ9071-222	CAPACITOR	0.0022μF,250V
		C5006	QEZ0375-686	E CAPACITOR	68μF,400V
		C5101	QCZ0212-472	CAPACITOR	0.0047μF,1kV
		C5102	QCZ0302-330Z	CAPACITOR	33pF,1kV
		C5104	QETC1HM-105	E CAPACITOR	1μF,50V
		C5105	QFLC1HJ-183Z	F CAPACITOR	0.018μF,50V
		C5106	QCBB1HJ-271	CAPACITOR	270pF,50V
		C5107	QFV91HJ-104	F CAPACITOR	0.1μF,50V
		C5201	QEMU0JM-227	E CAPACITOR	220μF,6.3V
		C5202	QEMT1CM-827	E CAPACITOR	820μF,16V
		C5203	QEMT1AM-128	E CAPACITOR	1200μF,10V
		C5204	QETN2AM-475	E CAPACITOR	4.7μF,100V
		C5205	QETN1HM-106	E CAPACITOR	10μF,50V
		C5207	QETN1CM-227	E CAPACITOR	220μF,16V
		C5208	QETN1AM-227	E CAPACITOR	220μF,10V
		C5301	QEMU0JM-227	E CAPACITOR	220μF,6.3V
		C5303	QETN1CM-107	E CAPACITOR	100μF,16V
		C5304	QFLC1HJ-683Z	F CAPACITOR	0.068μF,50V
		C5305	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C5306	QETN1AM-107	E CAPACITOR	100μF,10V
		C5307	QETN1EM-476	E CAPACITOR	47μF,25V
		C5308	QETN1CM-107	E CAPACITOR	100μF,16V
		C5309	QETN1CM-107	E CAPACITOR	100μF,16V
		C5310	QFLC1HJ-223Z	F CAPACITOR	0.022μF,50V
		C6007	QEKC1CM-107	E CAPACITOR	100μF,16V
		C6012	QETJ1CM-107	E CAPACITOR	100μF,16V
		C6013	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C6020	NDC21HJ-101X	CAPACITOR	100pF,50V
		C6021	NDC21HJ-101X	CAPACITOR	100pF,50V
		C6022	NDC21HJ-101X	CAPACITOR	100pF,50V
		C6032	NCB21EK-473X	CAPACITOR	0.047μF,25V
		C6037	QEKJ1HM-106	E CAPACITOR	10μF,50V
		C6055	NDC21HJ-220X	CAPACITOR	22pF,50V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C7001	QDGB1HK-102Y	CAPACITOR	0.001μF,50V
		C7007	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C7008	NCB21EK-223X	CAPACITOR	0.022μF,25V
		C7009	NDC21HJ-220X	CAPACITOR	22pF,50V
		C7010	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C7011	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C7013	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C7014	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C7101	NCB21HK-681X	CAPACITOR	680pF,50V
		C7102	NCB21HK-681X	CAPACITOR	680pF,50V
		C7103	NCB21HK-681X	CAPACITOR	680pF,50V
		C7104	NCB21HK-681X	CAPACITOR	680pF,50V
		C7109	NCB21HK-681X	CAPACITOR	680pF,50V
		C7110	NCB21HK-681X	CAPACITOR	680pF,50V
		C7111	NCB21HK-681X	CAPACITOR	680pF,50V
		C7112	NCB21HK-681X	CAPACITOR	680pF,50V
		C7119	NCB21HK-681X	CAPACITOR	680pF,50V
		C7120	NCB21HK-681X	CAPACITOR	680pF,50V
		C7130	NDC21HJ-330X	CAPACITOR	33pF,50V
		C7131	NCB21HK-223X	CAPACITOR	0.022μF,50V
		C7132	QETJ1CM-107	E CAPACITOR	100μF,16V
		C7133	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C7134	NCB21HK-223X	CAPACITOR	0.022μF,50V
		C7135	NCB21HK-223X	CAPACITOR	0.022μF,50V
		C7136	NCB21HK-223X	CAPACITOR	0.022μF,50V
		C7138	NDC21HJ-330X	CAPACITOR	33pF,50V
		C7164	NCB21HK-681X	CAPACITOR,J670EK/J770EU	680pF,50V
		C7166	NCB21HK-681X	CAPACITOR,J670EK/J770EU	680pF,50V
		C7202	QETJ0JM-477	E CAPACITOR	470μF,6.3V
		L1	QQL29BJ-100Z	COIL	10μH
		L2	QQL29BJ-101Z	COIL	100μH
		L3	QQL29BJ-100Z	COIL	10μH
		L4	QQL29BJ-100Z	COIL	10μH
		L5	QQL29BJ-100Z	COIL	10μH
		L12	QQR0967-001	COIL	12μH
		L13	QQL071J-330Y	COIL	33μH
		L22	QQL231J-1R0Y	COIL	1μH
		L24	QQL071J-270Y	COIL	27μH
		L27	QQL071J-330Y	COIL	33μH
		L28	QQL071J-680Y	COIL	68μH
		L201	QQL29BK-1R0Z	COIL	1μH
		L202	QQL071J-330Y	COIL	33μH
		L203	QQL29BJ-220Z	COIL	22μH
		L206	QQL071J-220Y	COIL	22μH
		L2251	QQL29BJ-100Z	COIL	10μH
		L2252	QQL29BJ-151Z	COIL	150μH
		L5201	PELN1184	COIL	33μH
		L5202	PELN1184	COIL	33μH
		L6003	QQL29BJ-470Z	COIL	47μH
		L7102	NQR0200-003X	FERRITE BEAD	
		L7105	QQL231J-1R0Y	COIL	1μH
		L7106	QQL231J-1R0Y	COIL	1μH
		L7201	QQL01BJ-101Z	COIL	100μH
		X1	QAX0576-001Z	CRYSTAL RESONATOR	
		X3001	QAX0445-001	CRYSTAL RESONATOR,J670EU/J770EU	
			QAX0444-001	CRYSTAL RESONATOR,J670EK/J770EK	
		X3002	QAX0527-001	CRYSTAL RESONATOR	
		S3001	QSW0602-004	PUSH SWITCH,REC SAFETY	
		S7001	QSW0456-002Z	TACT SWITCH,STAN BY	
		S7002	QSW0456-002Z	TACT SWITCH,TIMER	
		S7004	QSW0456-002Z	TACT SWITCH,CH-	

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	S7006	QSW0456-002Z	TACT SWITCH,CH+	
	S7008	QSW0456-002Z	TACT SWITCH,PLAY,J770EK/J770EU	
		QSW0456-002Z	TACT SWITCH,SP/LP,J670EK/J670EU	
	S7010	QSW0456-002Z	TACT SWITCH,DISPLAY	
	S7011	QSW0456-002Z	TACT SWITCH,REC	
	S7013	QSW0456-002Z	TACT SWITCH,STOP/EJECT	
	S7015	QSW0456-002Z	TACT SWITCH,PAUSE	
	S7016	QSW0456-002Z	TACT SWITCH,REC LINK	
	K2251	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	K2252	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	K2253	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	K5101	QQR0678-001Z	FERRITE BEAD	
	PC3001	GP3S123	IC(PHOTO SENSOR	
	PC3002	GP3S123	IC(PHOTO SENSOR	
⚠	PC5101	PC123F2	PH COUPLER	
	T2051	PELN0832	OSC TRANSFORMER	
⚠	T5001	QQS0033-001	SW TRANSFORMER	
	TU6001	QAU0150-001	TUNER	
	DI7001	QLF0031-001	FL TUBE	
	HD1	PQ35479-1-4	HOLDER(FDP)	
⚠	HS1	LP40090-001A	HEAT SINK,Q5101	
⚠	TB1	LP20317-005A	TERMINAL BOARD(PAL)	
	ET1	PQ21623-2-5	EARTH PLATE(RF)	
	OT1	QYTDST3006Z	SCREW,Q5101	
	OT2	PU59915-107	#500SPACER0.007,WR1	
	SD1	LP30644-001A	SHIELD CASE(PRE)	
	WR1	QUB321-06A4A4	SIN TWIST WIRE	
	FC5001	QNG0006-001Z	FUSE CLIP	
	FC5002	QNG0006-001Z	FUSE CLIP	
	J7101	PEMC1104	RGB21PIN SOCKET,AV1	
	J7102	PEMC1104	RGB21PIN SOCKET,AV2	
	J7103	QNN0292-003	PIN JACK,REAR OUT	
	J7105	QNN0287-002	PIN JACK,FRONT IN,J670EK/J770EU/J770EK	
⚠	LF5001	PELN1204-01-01	LINE FILTER	
⚠	LF5002	QQR0978-001	LINE FILTER	
	CN1	QGF1028C1-11	FPC CONNECTOR,(1-11)U.DRUM	
	CN2001	QGF1207C1-07	FPC CONNECTOR,(1-7)A/C HEAD	
	CN2002	QGB2532J1-02	CONNECTOR,(1-2)FE HEAD	
	CN3001	QGF1207C1-05	FPC CONNECTOR,(1-5)DRUM MDA	
	CN3002	QGB2532J1-02	CONNECTOR,(1-2)LOADING MOTOR	
	CN3003	QGB2015M2-08	CONNECTOR,(1-8)CAPSTAN MOTOR	
	CN3004	QGB2534J2-04	CONNECTOR,(1-4)ROTARY ENCODER	
⚠	CN5001	QGA7901C3-02	CONNECTOR,(1-2)AC IN	
	CN7003	QGF1207C1-09	FPC CONNECTOR,(1-9)FRONT	
⚠	CP4001	ICP-N25	CIRCUIT PROTECTOR	
⚠	CP5301	ICP-N38	CIRCUIT PROTECTOR	
⚠	CP5302	ICP-N25	CIRCUIT PROTECTOR	
⚠	F5001	QMF51E2-2R0J1	FUSE	T2.0A,AC250V

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AUDIO CONTROL HEAD BOARD ASSEMBLY <12>

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PW1	LPA10010-01A1	A/C HEAD BOARD ASSY
	CN1	QGF1208F1-07	FPC CONNECTOR

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DEMOD BOARD ASSEMBLY <14>

# ⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PW1	LPA10060-03B	DEMOD BOARD ASSY	
	IC6701	TDA9874AH/V2	IC	
	Q6701	2SC3936/BC/-X	TRANSISTOR	
	R6701	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R6703	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R6705	NRSA02J-100X	MG RESISTOR	10Ω,1/10W
	R6706	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R6708	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R6711	NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
	R6715	NRSA02J-100X	MG RESISTOR	10Ω,1/10W
	R6716	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	R6717	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	R6719	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
	R6721	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
	R6722	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
	R6723	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
	R6724	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
	R6725	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	R6726	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	C6701	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C6702	NCB21HK-682X	CAPACITOR	0.0068μF,50V
	C6703	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C6704	NCB21HK-682X	CAPACITOR	0.0068μF,50V
	C6705	NCF21CZ-474X	CAPACITOR	0.47μF,16V
	C6706	NCF21CZ-474X	CAPACITOR	0.47μF,16V
	C6713	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	C6716	NCF21CZ-474X	CAPACITOR	0.47μF,16V
	C6718	NCB21EK-224X	CAPACITOR	0.22μF,25V
	C6719	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C6720	QEKJ1HM-105	E CAPACITOR	1μF,50V
	C6722	NCF21CZ-474X	CAPACITOR	0.47μF,16V
	C6723	NDC21HJ-101X	CAPACITOR	100pF,50V
	C6724	NDC21HJ-101X	CAPACITOR	100pF,50V
	C6728	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C6729	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
	C6730	QEKJ1CM-476	E CAPACITOR	47μF,16V
	C6731	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	C6732	NCB21HK-103X	CAPACITOR	0.01μF,50V
	C6733	NCB21HK-222X	CAPACITOR	0.0022μF,50V
	C6734	NCB21HK-103X	CAPACITOR	0.01μF,50V
	L6702	QQL231J-1R0Y	COIL	1μH
	L6703	QQL231J-3R3Y	COIL	3.3μH
	X6701	QAX0560-001	CRYSTAL RESONATOR	
	K6701	NQR0200-003X	FERRITE BEAD	
	K6703	NQR0200-003X	FERRITE BEAD	
	K6704	NQR0200-003X	FERRITE BEAD	
	K6705	NQR0200-003X	FERRITE BEAD	
	K6706	NQR0200-003X	FERRITE BEAD	
	K6707	NQR0200-003X	FERRITE BEAD	
	CN6701	QGG2502K1-10	HEADER PIN	

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MINI OPE.BOARD ASSEMBLY(J670EK/J670EU)<28>

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PW2	LPA10086-02D2	MINI OPE BOARD ASSY	
R7043	QRE141J-272Y	RESISTOR	2.7kΩ,1/4W
R7044	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R7045	QRE141J-682Y	RESISTOR	6.8kΩ,1/4W
S7021	QSW0456-002Z	TACT SWITCH,REW	
S7022	QSW0456-002Z	TACT SWITCH,FF	
S7023	QSW0456-002Z	TACT SWITCH,PLAY	
CN7005	QGF1208C1-09	FPC CONNECTOR,(1-9)MAIN	

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LOADING MOTOR BOARD ASSEMBLY <55>

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PW2	LPA10010-01A2	LOADING MOTOR BOARD ASSY
CN1	QGB2533K1-02	CONNECTOR

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SHUTTLE BOARD ASSMBLY (J770EK/J770EU)<85>

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PW1	LPA20006-01A	SHUTTLE BOARD ASSY
UN7001	QSW0845-001	JOG SHUTTLE SW
CN7008	QGF1209F1-09	FPC CONNECTOR(1-9)MAIN

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R.PAUSE BOARD ASSEMBLY <91>

# ⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PW3	LPA10086-01D3	R.PAUSE BOARD ASSY	
R7166	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
WR1	QUM022-18A4A4	PARA RIBON WIRE	
J7107	PU60612	MINI JACK	

⚠ REF No. PART No. PART NAME, DESCRIPTION

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